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USSR: Science & Technology Policy

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Science & Technology

USSR: Science & Technology Policy

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New Rules To Govern Activity of Scientific Research Institutes

907A0234A Moscow POISK in Russian No 14 (49),
7-13 Apr 90 p 3

[Article: "Scientific Research Institutes: Draft of the Basic Principles for the Organization and Activity of a USSR Academy of Sciences Scientific Research Institute"; passage in boldface as published]

[Text]

I. General Resolutions

1. In accordance with the statutes of the USSR Academy of Sciences, a USSR Academy of Sciences institute is the basic organizational unit for scientific research activity in the USSR Academy of Sciences [AS]. The institute is subordinate to the USSR AS Presidium, as part of a USSR AS department or of a regional USSR AS department.

2. The corresponding USSR AS departments, regional departments or scientific centers provide leadership for the institute's activity, involving other USSR AS departments, as needed, for scientific and methodological leadership.

3. An institute is an independent scientific organization with the rights of a legal entity. In its activity, it is guided by the laws of the USSR, by resolutions and instructions of the USSR government, by resolutions and instructions of the USSR AS Presidium, by decisions of the USSR AS departments, and by other normative acts, as well as by the existing "Basic Principles," according to which an institute develops and adopts its own statutes, which are approved by the corresponding department of the USSR AS.

The principles of freedom in scientific creativity, participation of the collective in management, broad glasnost, criticism and self-criticism, consideration of public opinion, discussions, competition among scientific ideas and results, and extensive involvement of youth in scientific research work should be stipulated in the statutes.

II. The Scientific, Scientific-Organizational and Economic Activity of an Institute

4. An institute acts in accordance with the basic directions and long-term and annual plans for scientific research work.

The basic directions, long-term plans and basic tasks for the annual plans are developed by the institute and approved by the appropriate USSR AS department. For institutes under USSR AS regional departments, scientific centers or branches, approval is made by the regional departments of the USSR AS, by scientific centers, or by branches of the USSR AS as coordinated with the USSR AS departments for scientific fields and directions.

4.1. The main tasks of an institute are: to focus efforts on the most important directions of basic research, to conduct research and obtain scientific results of first-priority significance for scientific and technical progress and to promote the socioeconomic and spiritual development of society; to draft recommendations on the utilization of research results and to participate in assimilating said results; to study and summarize the achievements of world science according to the institute's profile and to cooperate in full utilization of them; to develop forecasts and conduct expert analysis in the appropriate field of science and engineering; to train scientific cadres with higher skills; and to improve the forms for organization of scientific research.

The institute is responsible for the high quality of its research and for obtaining scientific results, for creating conditions for the maximum implementation of the scientific collective's creative potential and for reporting on its work to the appropriate department.

5. In order to fulfill the tasks assigned to it, the institute:

5.1. Organizes its work, taking into account resolutions by the departments and recommendations from scientific councils on the corresponding problems;

5.2. Among its subdivisions and other collectives, holds competitions on scientific work (designs, patent claims) and, according to the results of competition, grants the necessary resources and organizes the fulfillment of the corresponding scientific research;

5.3. Reforms publishing activity on the results of scientific research;

5.4. Makes contacts and ties with scientific institutions and scientists of foreign countries;

5.5. In conformity with legislation, acquires and sells licenses for implemented inventions and discoveries;

5.6. Carries out foreign economic activity in accordance with existing legislation;

5.7. Announces competitions to fill vacant posts for scientific employees, carries out the training of scientific cadres through graduate and doctoral study, organizes the improvement of skills, and regularly certifies institute associates. (Option: certification commissions should consist of no less than two-thirds of the members of the institute scientific council);

5.8. Within the limits of existing material resources, independently resolves economic and organizational problems in its own work.

6. The institute should implement an active social policy and ensure the observance of existing legislation, aimed at improving labor and living conditions for employees and at improving the surrounding natural environment.

7. The institute has, enjoys and disposes of the property and resources acquired by it in accordance with the statutes and existing legislation.

III. The Statutes and Structure of an Institute

8. An institute's statutes are developed by the board of directors and scientific council of the institute.

The statutes are passed by no less than two-thirds of the votes of the membership of the scientific council. (Option: including the director's vote). In the event of disputes, the matter should be submitted to the bureau of the corresponding department.

The statutes are to be approved by the department bureau. Corrections and amendments to the statutes can be introduced no more often than once a year, and are approved by no less than two-thirds of the votes of the membership of the scientific council. (Option: including the director's vote.) Corrections and amendments are approved by the department bureau.

9. The institute's structure is developed by the board of directors, examined by the scientific council, and approved by the institute director.

The structural subdivisions of an institute are the scientific research department, laboratories, sections, and scientific collectives organized for a definite time period, as well as auxiliary subdivisions.

In an institute, on an advisor's desire, a laboratory for the advisor can be organized under the board of directors.

On the recommendation of the scientific council, an engineering center, as an independent structural subdivision and specialized organization, can be created in the institute; temporary scientific and technical laboratories can also be organized.

10. The institute can organize an association of independent departments with their own scientific councils and headed by a department director.

The institute department directors are elected (option: by the institute scientific council by secret vote and are approved) by a general meeting of the appropriate USSR AS department. In order to coordinate the activity of an association and of an institute's general services, a council of directors may be created which includes the director of the institute and the directors of institute departments.

The scientific councils of institute departments are approved by the bureau of the corresponding USSR AS department, on the recommendation of the directors of the corresponding departments.

11. The institute's structural subdivisions, including associations of independent departments, operate according to the resolutions concerning them, drafted by the boards of directors and by the scientific council and

approved by the institute director. (Option: drafted by the board of directors, approved by the scientific council, and officially registered on the order of the institute director.)

IV. Rights and Responsibilities

The rights and responsibilities of scientific associates, as well as the interrelations of labor collectives with the institute administration, are regulated by existing labor legislation, by other normative acts, and by the institute statutes.

V. Rights of the Institute

12. The rights belonging to the institute are executed by the director and, according to established distribution of responsibilities, by other institute officials.

13. The institute, in addition to other functions:

13.1. With the broad participation of the institute's scientific collective, the institute develops and, in the scientific council, approves drafts for long-term and annual plans for scientific research and experimental work, for using the achievements of science and technology in industry and other spheres of life, and for material and technical and financial support for the planned work, and also develops other plans;

13.2. Develops draft plans for training scientific cadres, draft plans for international scientific cooperation, and draft annual plans for trips by scientists to foreign countries; it also concludes agreements on scientific cooperation with foreign organizations;

13.3. Determines the sizes of expenditures according to its budget articles and approves the budget for expenditures; receives and spends foreign hard currency funds in the established procedure; creates economic incentive funds in the established procedure.

14. An institute can use bank credit and is responsible for its purposeful use and timely repayment.

15. In the area of labor and salaries, the institute:

15.1. Develops and approves the structure and draft schedule within the limits of the established number of employees and existing resources;

15.2. In accordance with established procedure and within the wage limits, it establishes and changes the official salaries for employees within the limits of the minimum and maximum amounts for the corresponding post, as well as additions to official salaries as stipulated by existing legislation;

15.3. Awards bonuses to employees according to the resolutions on bonuses drafted by the institute.

VI. The Institute Management

16. Management of an institute is done by the procedure stipulated in its statutes.

17. The director is the head of the USSR AS scientific research institute. The right to nominate candidates for the post of institute director belongs to the department bureau, the scientific council, and the institute's social organizations, as well as to its scientific subdivisions, other scientific institutions and higher educational institutions, USSR AS members, scientific councils and societies of the USSR AS, according to the institute's profile.

17.1. Proposals for the nomination of candidates are sent to the USSR AS department (regional department) which is holding the elections. The department only allows candidates, from whom it has received written consent to be on the ballot, to participate in elections. The receipt of nomination documents is to stop 15 days before elections.

The USSR AS department (regional department) submits the list of official candidates for the consideration of the scientific collective (option: scientific council) of the institute no later than 10 days before the elections.

17.2. The general meeting (conference) of the scientific collective (option: scientific council) of the institute considers all nominated candidates and, after open discussion, holds a secret or open vote on all candidates. Voting results are reported to the corresponding department. The discussion of the candidates is held at an expanded meeting of the institute scientific council, chaired by the department academic secretary or his deputy.

17.3. Election of the institute director is held (option: for no more than two 5-year terms in succession) by secret vote at a general meeting of the department (regional department) of the USSR AS. The candidate who receives the greatest number of votes, but no less than one-half of the votes of those present, given the presence of no fewer than two-thirds of the listed membership of the department, is elected.

18. The director heads the institute on the basis of one-man rule and is responsible for all aspects of the institute's activity in accordance with its statutes.

The institute statutes can stipulate management by the council of directors or by several directors in turn.

19. The institute scientific council consists of a number of leading scientists from the institute. (Option: as well as representatives of the institute's social organizations.) The institute director is the chairman of the scientific council.

Leading scientists and specialists not working at this institute may be chosen (or invited) to be part of the council.

The personnel structure of the scientific council is presented by the institute director for a secret vote at a general meeting (conference) of the institute's scientific associates.

The number, structure and membership of the scientific council is approved and changed by the bureau of the corresponding USSR AS department, on the suggestion of the institute director.

20. The institute scientific council:

20.1. Considers:

- the basic directions of the institute's scientific activity: programs, grants, and drafts of the long-term and annual plans for scientific research and experimental design work;
- the draft plans to train scientific cadres and plans for realizing the results of scientific studies, meetings and conferences;

20.2. Nominates outstanding scientific work, discoveries and inventions for Lenin prizes and USSR state prizes, USSR Council of Ministers prizes, Union republic council of ministers prizes, and Leninist Komsomol prizes, as well as gold medals and awards in the name of outstanding scientists; it nominates institute scientists for honorary titles; it nominates candidates for membership (academicians) and corresponding membership in the USSR AS, the Union republic academy of sciences, and sectorial academies of sciences;

20.3. Examines other questions as stipulated by the institute statutes.

Disagreements between the director and the institute scientific council are to be considered by the bureau of the appropriate USSR AS department.

21. The scientific council has the authority to make decisions, if no less than two-thirds of its membership is present at the meeting.

Resolutions of the scientific council are passed, if no less than 50 percent of the scientific council members present vote for them.

Decisions are made by open or secret vote on the discretion of the scientific council, if the institute statutes do not stipulate otherwise.

22. The institute's deputy directors for scientific matters and the scientific secretary are elected by the institute scientific council on the director's recommendation and are approved by the USSR AS department bureau.

The heads of scientific structures and subdivisions and the leaders of research groups are elected by the institute's scientific council. (Option: taking into account the opinion of the scientific collective.) The leaders of other subdivisions and services are appointed by the institute director, according to the procedure stipulated by the institute statutes.

23. The deputy directors for general matters or for the administrative-economic section are appointed by the USSR AS department, on the recommendation of the institute director and as coordinated with the USSR AS Administration of Affairs.

The responsibilities of officials, indicated in articles 22 and 23, are stipulated by the institute's statutes.

VII. Reorganization or Abolition of an Institute

24. The reorganization, division or abolition of an institute can be done by the USSR AS Presidium in accordance with existing legislation. A petition to the USSR AS Presidium for the reorganization, division or abolition of an institute can be instituted by resolution of a general meeting of the USSR AS department. The question of instituting a petition is decided by a simple majority vote of the department members present at the general meeting of said USSR AS department.

From the editors: Please send all suggestions concerning this draft to the USSR Academy of Sciences Presidium before 31 May (Moscow, Leninskiy Prospekt, 14) and to the editors of POISK (Moscow, B. Kolkhoznaya Ploshchad, No 3, Bldg. 1).

Osipyan Interview on Problems of USSR Academy of Sciences

907A0282A Moscow POISK in Russian No 13 (48),
29 Mar-6 Apr 90 pp 1, 2

[Interview with Vice President of the USSR Academy of Sciences Academician Yuriy Osipyan, by Yelizaveta Ponarina, under the rubric "Details for POISK": "In a Month There Is the Election"; date and place not given; first two paragraphs are POISK introduction]

[Text] They say that in the state there should be two conservative forces in order to preserve the foundations of morality and knowledge—the church and the Academy of Sciences. In spite of all the dissimilarity of foreign norms of existence and our customs, the USSR Academy of Sciences is also not inclined to abrupt changes of its traditions. The General Assembly went on for four days, but fundamental decisions were never made. Is it not annoying to those who prepared, for example, amendments to the charter of the USSR Academy of Sciences? After all, today it is already clear to everyone that it is quite obsolete. However....

Vice President of the USSR Academy of Sciences Academician Yuriy Osipyan voices his opinion in this regard:

Yu. Osipyan: But what decision, strictly speaking, was it necessary to make? The goal of the General Assembly lies not in making decisions, but in ascertaining the opinion of members of the Academy on disturbing questions. Several of them have accumulated.

The first one is anxiety about the prestige of the pursuit of science not only in the state, but also in society. The second one is the alarm with regard to the "brain drain," which has already started. We cannot give a scientist \$150,000 a year, as they do there, and for the present the conditions for the work of such scientists do not exist. While creative life is even shorter than simply human

life.... There they go. You will not stop them with administrative bans. It is necessary to organize a counterflow of scientists, purposefully agreeing for the sake of this to outlays. And, finally, the third question is the ratio between basic financing and grants. In essence this is the ratio between basic science and applied science. Here the positions have become clear.

Specifically as regards the charter. In my opinion, it is better to rewrite it all over again than to edit it. It consists of three parts. The first is the fictional part: a description of what the Academy of Sciences is, why it exists.... Now there is there a set of politicized terms. For example, "the basic task of the Academy of Sciences is to promote the building of communism...." Here it is necessary to write what place the Academy of Sciences holds in society and in the state.

POISK: Are you an advocate of the Academy of Sciences remaining subordinate to the USSR Council of Ministers?

Yu. Osipyan: No, I am an advocate of the Academy of Sciences being an independent, nongovernmental organization. Of it receiving money directly from the state—a percentage of the national income, not by the last line in the spending of departments from the government.... And it is necessary to say in the charter that the Academy of Sciences has one task—to develop science in the country. Not "to promote the building of communism" or chemicalization or vaccination, but to carry out basic research, to maintain the proper level of training of scientific personnel.... It is necessary to formulate all this all over again in the first part of the charter.

Further there are organizational questions. How members of the Academy of Sciences are elected, what the members of the Academy of Sciences are. There are many dispute here, but it is necessary to remember that all civilized countries have allowed the communities of their sages, their scientists themselves to select their members, not to hold in this connection national elections.... And the third part is how the Academy of Sciences establishes its governing organs.

POISK: Why did they begin with it, having bypassed the first two?

Yu. Osipyan: They did so intentionally. There lies ahead of us on 23 April the election of the presidium of the Academy of Sciences. It was necessary to formulate without fail how we will do this. Previously this worried hardly anyone, you understand yourself that they elected the president while actually implementing instructions from above.

POISK: But now you will not?

POISK: Now we will not.

When preparing the draft, we thought of electing the presidium as the Supreme Soviet elects the government. But then we rejected it: after all, we all know each other

well and believe that each member of the Academy has the right not only to elect, but also to propose to himself candidates.

In short, we preferred a completely democratic version: we elect by the General Assembly the president on an alternative basis. We vote in three rounds. If one of the candidates does not immediately receive more than 50 percent of the votes of the registered staff, only the two candidates, who collected more votes than the others, are accepted for the next round. One is accepted for the third round. What if this time he also did not collect more than 50 percent? Hence, the Academy does not want to see as president either him or those who ran for election. Then everyone disperses, and everything begins all over again.

Finally the president has been selected. Now the time comes when the General Assembly has to select a cabinet for him. At first the president himself states what it will be in size and his own version of the composition. It is the right of the assembly not to agree with him, to argue, and to propose different versions. For the first time on the same level of the vice presidents the General Assembly has also been invited to elect the chief scientific secretary. Previously the presidium elected him. This is a sensible amendment, for the chief scientific secretary is not the main clerk, his functions are broad and responsible, he prepares the meetings of the presidium, manages international relations—for all this he should have powers from the General Assembly of the Academy of Sciences.

Then the meetings of the departments are held. When there are already the president and vice presidents—the top level has been filled, in the departments they can calmly figure out who will be the academician secretary.

Finally, the General Assembly meets again to select the members of the presidium.

POISK: But when will the election of new members of the Academy be?

Yu. Osipyan: Afterwards. We have not yet specifically decided when. This is a lengthy process, it is necessary to arrange it for a time which is free of other public events in the country.

POISK: What has been left for personnel of the discussion of the basic questions concerning the charter?

Yu. Osipyan: Of those questions, which are impeding organizational work, almost nothing. But there are those, which it is necessary to discuss in order to achieve at the Academy, say, national calm. This is the situation with full members and corresponding members. How new members are to be elected to the Academy. Who will take part in the discussion of candidates.... There is an entire heap of themes here. You will not settle them in a hurry. Thus far the presidium has not submitted them on its

own behalf for consideration. While the commission for the charter has not submitted them on behalf of the presidium.

Thus, as to the statute on the election of the presidium, it has been voted on and passed. As to the amendments to the charter itself, they have been sent to all the members of the Academy so that they would voice their opinion and send in responses. There are three questions—the elimination of sections, the selection of the chief scientific secretary by the General Assembly, and the changeover to voting in accordance with the registered staff. Incidentally, such a written vote is also being conducted for the first time.

But you said that the Academy is avoiding changes.... It is simply that they should ripen and be accepted by the scientific community.

Bolbasov Comments on Technology Lag

907A0265A Moscow IZOBRETATEL I

RATSIONALIZATOR in Russian No 4, Apr 90 p 6

[Article by V.S. Bolbasov, USSR people's deputy, USSR Supreme Soviet member: "An Unsaid Speech"; passages in boldface as published]

[Text] At two congresses of people's deputies, the deputy from the VOIR [All-Union Society of Inventors and Rationalizers], V.S. Bolbasov, asked for the floor in order to speak of the problems with domestic invention work. He voted against passing the program proposed by the state and for "accepting the information," since the interests of invention work, as well as the condition of scientific and technical progress on the whole, were poorly reflected both in the congresses of people's deputies and in "measures to improve the economy."

The solution of our national economy's critical condition and successful implementation of economic reform, the VOIR deputy believes, are impossible without the careful use of the creative potential of inventors and rationalizers, without supporting it through scientific and technical progress.

However, at the existing rate of development of invention work in the country, we lag far behind the developed capitalist states in advanced technologies and the creation of new machines, instruments and equipment, and this gap may increase even more.

Most unfortunately, our state, rich with talented people who would be sought after in Japan or the U.S., uses their creative potential poorly. Only 4 percent of the working people in our country create technical innovations. The time period to introduce inventions consists on the average of seven to nine years, most inventions are implemented at only one enterprise, and many great inventions come to life only after a quarter century. While surpassing the U.S. in terms of the number of engineers and scientists by a factor of almost three, we receive fewer funds from the sale of licenses abroad than

the Americans by a factor of 40. The Japanese receive on the order of 20 billion dollars annually from the rationalization movement alone. There, an average of 20 rationalization proposals are submitted per worker, yet we have one five-hundredth of this number. The share of new equipment that uses inventions is low: even in machine building it does not exceed 40 percent.

Due to the slow penetration in industry of new technological processes and systems, economical kinds of materials, mechanization systems, robotic equipment and other highly productive equipment, the losses of material resources in industry and construction have virtually not decreased in the course of many years, and last year consisted of more than 2 percent of the cost of consumed raw materials and materials. Losses of fuel and energy during their utilization reach 49 percent. Thirty percent of agricultural produce perishes. In addition to all this, the USSR state budget deficit for 1990 is over 100 billion rubles.

Substantial shortcomings have been revealed in the administration of invention work, both along social, as well as state lines.

The State Committee on Inventions and Discoveries is not an independent union-wide body for state management, but an appendage of another department, the USSR GKNT [State Committee for Science and Technology], which to a great extent reduces the effectiveness of conducting a unified policy for invention work, as well as the authority of this policy both in our country and abroad.

The State Committee on Inventions is, maybe, the only body of state administration that does not have its own offices and is forced to lease them at various organizations. Clubs for independent technical creativity and agencies for the public management of invention work are not located in the best of premises. For instance, the Minsk Oblast VOIR Council has been huddled in a dark, dank basement office for 17 years already.

An inventor's work is not protected in our country. Here are several examples to confirm what I have said. The single combat of Ulyanovsk inventor Sergey Aleksandrovich Mazanov against the system that has formed, after he refused to give the leaders authorship of his inventions, has lasted 11 years. For this, they began to persecute him and accuse him of violating secrecy and, deprived of access, he was dismissed from his job in December 1978. For 11 years, he has been unable to find understanding or justice from the leaders of the Ministry of the Aviation Industry or from law enforcement agencies. Yu.M. Yemelyanov, creator of a high-frequency tubular ozonizer; N.M. Novozhilov, Lenin prize winner, doctor of technical sciences; Yu.M. Romanenko, author of 140 inventions, candidate of technical sciences, and many, many other inventors find themselves in similarly bad situations.

The number of inventors in the Academy of Sciences system is not growing. Less than one percent of young specialists participate in technical creativity.

To this day, there is no base for the development of invention work in this country. We must radically restructure work with youth. Considering the importance of this task, the CPSU Central Committee resolved to create a unified state-wide system for youth scientific and technical creativity. A good opportunity has appeared to use the organizational structure of the NTTM [scientific-technical creativity of youth] system to expand assistance for young inventors and rationalizers.

Foreign and domestic experience confirms that, at the current rates of scientific and technical progress, the instruction of technical creativity should start in elementary school, and the first rudiments should be taught in childrens preschool institutions. However, to this day even the educational programs of the country's VUZs [higher educational institution] and technical schools do not include instruction in the rudiments of technical creativity through the course "Fundamentals of Invention, Rationalization, Patent and Licensing Work." Great hopes were placed on the CPSU Central Committee, USSR Council of Ministers, AUCCTU [All-Union Central Council of Trade Unions] and Komsomol Central Committee resolution "On Measures to Further Develop Independent Technical Creativity." However, the resolution has essentially not been implemented. The existing system of material and moral incentives for invention and rationalization creativity is being used ineffectively. In most cases, the authors' compensation for the introduction of inventions is not paid for in full or reaches the inventor only after dragged-out, humiliating correspondence and agreements.

The leadership of enterprises, departments and ministries disregards patent and licensing work in the creation and assimilation of new equipment and technologies. Patent and information services, in the condition to which they have been brought here, do not conform to the requirements advanced by scientific and technical progress and the modern world market.

One of the main causes of shortcomings in the organization of invention and patent and licensing work lies in the weak orientation of the economic mechanism toward scientific and technical progress. Hence, enterprises' economic disinterest in using inventions.

The country lacks a risk fund. The incentives for inventors, especially in the Academy of Sciences system and VUZs, are few. Besides the economic reasons for the stagnation of technical creativity, one cannot help but notice the utterly disrespectful attitude toward inventors on the part of our society, which generally prefers the equalization approach toward both highly gifted, unusual personalities and toward its pool of intellectuals.

Inventors and rationalizers believe that the attitude at all levels of leadership toward organizing and carrying out

invention and patent and licensing work must be radically changed. The main direction should be toward using inventors' creative thought. Most unfortunately, significant shifts in the application of technical innovations have not occurred, even in the period of perestroika. Thus, whereas about 50 percent of state assignments to develop and assimilate new equipment and technology contained highly efficient inventions in the 11th 5-year period, the state order issued for 1989 included the mastery of only two items containing inventions, and the 1990 plan has only five such assignments.

It is quite obvious that under these conditions there is an imminent need for radical perestroika of invention work in the country. In order to apply big, intersectorial inventions, in the 13th 5-year period we must convert to the system contained in the new draft USSR Law on Invention Work. In order to economically interest enterprises in new equipment and advanced technologies, in the first three to five years of assimilation and output of such production we should legislatively free them of any payments out of the profit, as is done in many other countries.

In addition, one cannot help but see certain positive shifts as well. The new economic mechanism, cost-accounting and self-financing, to which enterprises, regions and VOIR organizations are gradually converting, are bearing fruit. Today, for instance, departments of a fund for assistance to inventors and rationalizers, cost-accounting centers and engineering and technical cooperatives have been created under the Belorussian VOIR councils to accelerate the application of highly efficient inventions and rationalization proposals and to offer technical services to customers. Of course, these are the first steps of the VOIR's emancipated activity, free of formalism.

Today, as never before, we must realize and reinforce within ourselves the idea that only by relying on the most rapid use of the achievements of science and the technical creativity of inventors and rationalizers will it be possible within acceptable time periods to fundamentally change the economic situation in our country's economy for the better.

There simply is no other way!

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New Regulations on Academy Institutes, Laboratories Debated

907A0300A Moscow POISK in Russian No 25 (60),
22-28 Jun 90 pp 4, 5

[Report by Yelizaveta Ponarina on round table of the editorial board of POISK and the party committee of the Presidium of the USSR Academy of Sciences under the rubric "By What the Scientific Research Institute Is Supported": "Dare, You Are Free"; date not given; first three paragraphs are POISK introduction]

[Text] Scientists, if anyone does, realize better than others the significance of such concepts as "regulations," "structure," and "charter." Starting with the first congresses of people's deputies, they have gradually been training society to appreciate these words, as well. Not fearing the dry, bookish way these words sound and enduring reproaches of lingering on procedural issues, the scientist-deputies are doggedly imbuing these terms with meaning, for the picture is clear to them: Whatever rules of conduct we establish for ourselves are the ones by which we will live.

That is why the energy with which POISK readers responded to the publication "By What the Scientific Research Institute Is Supported" (No 14, 1990), did not seem strange to us. Although the lines of "The Basic Principles of the Organization and Activity of the Scientific Research Institute of the USSR Academy of Sciences" were dry and devoid of emotions, they forced many people to take pen in hand and others even to come to the editorial office in order to express their point of view. Many remarks on the draft were collected.

Therefore, the editorial board and the party committee of the presidium of the USSR Academy of Sciences decided to assemble representatives of various academic institutions at one "round table" in order to examine the problem from different points of view—those of the Union of Scientists, public organizations of scientific research institutes, and the presidium of the USSR Academy of Sciences.

I Would Be Glad To Go to Heaven

The discussion, in our opinion, was enthusiastic, as far as this is possible in academic surroundings. Vice President of the USSR Academy of Sciences V.N. Kudryavtsev and Doctor of Technical Sciences M.M. Krayushkin conducted the round table. Aleksey Zakharov, a scientific associate of the Institute of Oceanology of the USSR Academy of Sciences, was the first to take the floor:

"First it must be decided from which concept of the Academy of Sciences we will proceed? Last year in the election of deputies to the 1st Congress two points of view emerged. One expressed a position, in conformity with which the Academy of Sciences is an assembly of academicians and corresponding members. While all the other associates, who work at its institutions, are hired manpower. The second position—of scientific research institutes—is diametrically opposed. We believe that the Academy of Sciences is the sum total of scientific associates.

"But the first concept is secured by the prevailing charter of the Academy of Sciences. An exception was made only then, in the election, on the suggestion of Academician Andrey Dmitriyevich Sakharov. Today the question is emerging again. It will determine the status of the scientific associate in the system of the Academy of Sciences, the interrelations of the scientist with the administration, the scientific councils of institutes, the

departments, the presidium.... There are tens of questions here. The same election of the director, the certification of associates. Whom it is possible to call a professional scientist?"

"Indeed, very much depends on who will determine the skill of an associate of a scientific research institute," Doctor of Sciences Vladimir Pavlov, a member of the board of the Union of Scientists, seconds his colleague. "The colloquium of the laboratory certifies junior scientific or simply scientific associates, the academic council ought to examine senior scientific associates. But it, too, is not capable of certifying every senior associate. This is basic science!"

"We must not forget that we are changing over to market relations," the voice of Aleksey Sakharov, a candidate of chemical sciences from the Institute of Organic Chemistry of the USSR Academy of Sciences, rang out, "hence, a manpower market and a contract system are emerging. And then certification acquires a new ring. It may become the last point of the contract and is capable of making the scientist completely dependent on the administration. People foresee this and are not hurrying to change over to the new contract system...."

"And how are they to hurry, if the contract system is now at variance with existing legislation!", Doctor of Economic Sciences Lyudmila Vartazarova dots the "i's." "The Labor Code does not apply to scientific associates, starting with the senior associate, it is impossible even to contest in court the decision on their dismissal. The system of contracts should envisage the possibility of the social protection of the scientific associate."

"It is for this reason that the charters of institutes should be their own creation. As it was at Russian universities, as it is in many countries," Vice President of the USSR Academy of Sciences Academician Vladimir Kudryavtsev summarizes the beginning of the discussion. "This idea obviously was not discerned by some people, and many people are demanding that 'The Basic Principles' be converted into an instruction that would describe in detail how it is necessary to act in one case or another. Instead of emancipation, for which they prayed and for which they fought, they long to receive instructions. Up to the point that they want to make the presidium responsible for the specification at the institute of the role of the collective and the academic council.... They must decide all this themselves."

"We will decide," responded Sergey Panarin, lead scientific associate of the Institute of Oriental Studies. "But who will adopt the charter—the academic council or the labor collective? The scientific council, perhaps? What is the charter—an opportunity for independent creativity or a guide for management?"

"Find your position yourself," Vladimir Nikolayevich insists.

"Alas, it does not turn out," Candidate of Physical Mathematical Sciences Sergey Savinov of the Physics

Institute of the USSR Academy of Sciences believes. "After the assurance of the president of the Academy of Sciences of the future freedom we made our own new charter. The legal department of the Academy of Sciences refused to stamp it, that is, to recognize it as legal, because minor issues did not conform to the prevailing temporary charter. So it is not worth deluding oneself. 'The Basic Principles' will always serve for the legal and other departments of the Academy of Sciences as an enforceable enactment, and in case of approval any independent charter of a scientific research institute will not conform to the canon."

"This once again testifies that the rule of approval has degenerated!" Doctor of Sciences Valeriy Tishkov, director of the Institute of Ethnography, takes up the idea. "The academy must abandon this practice. The institute does not have, in essence, any rights. Look at 'The Basic Principles,' Section 13. It does not have the rights to formulate any plans—of research work, the training of personnel, only their drafts. Without approval it is impossible to take a step. A mass of forces is lost, hundreds of messengers run about. And it is necessary to simplify this, to democratize this! To do away with the role of the position in science and to raise the authority of the scientist."

Whose Are You, Academy?

"In short, the general provisions of this document," Aleksey Zakharov states, "evoke nonacceptance. At our Institute of Oceanology we wrote our own draft. Here it is, we propose: 'The scientific research institute of the USSR Academy of Sciences is a state scientific research institution, the basic task of which consists in the development of basic science.' We talk about a state institution because for the present there is no possibility to jump over prevailing legislation. 'The institute of the USSR Academy of Sciences belongs to the association of scientific research institutes which form the system of the USSR Academy of Sciences.' This is a tribute to the charter, we would write with pleasure that the association of institutes forms the USSR Academy of Sciences."

"The coordination of scientific work on the scale of the country, the planning of state programs of basic research, the conducting of examinations and competitions of scientific research works, and the performance of functions, which are connected with the own needs of the institutes that belong to the Academy of Sciences, are under the jurisdiction of the USSR Academy of Sciences. The institute of the USSR Academy of Sciences is an independent organization, has the rights of the legal person, and in its activity is guided by the legislation of the USSR and the union and autonomous formations, on the territory of which it is located, and by the charter of the institute.' And not by another other orders, decrees, and especially enforceable enactments."

"The financing of competitive programs, themes, and enterprising development, and contractual operations on the practical use of basic research, not to the detriment

of the basic activity, are the economic basis of the activity of the institute.' Further there is a fundamental question—"The institute owns, uses, and disposes of the property that belongs to it and the property and assets, which have been attached to it, in conformity with USSR legislation.'

"Now Paragraph V. Conceptual things should be reflected in it. 'The scientific research institute is established as a field for the scientific activity of scientific associates, then for primary scientific collectives, laboratories, and departments, which are united by common scientific interests and by the authorities of their managers. The scientific collective enjoys independence in the choice of research methods, planning, and the distribution of the obtained assets.' It is more advisable, in our opinion, to write the basic provisions that way."

Everyone readily agreed with what was proposed. They hesitated on just one thing—"the scientific research institute is a state institution." Is this not the equivalent of subordination?

"It is, of course," Academician Vladimir Kudryavtsev asserted. "Now we are subordinate to the Council of Ministers. Without its permission we can neither open nor shut an institute. That is to say, we are subordinate to the government. A different approach is also possible. For example, the USSR Academy of Sciences directly interacts either with the President of the USSR or with the USSR Supreme Soviet. This is also state subordination."

"If the tasks of the Academy of Sciences are the conducting of basic research, everything starts with financing. Who will maintain basic science?", Lyudmila Vartazarova touches the most painful thing in the current life of academic institutes. "Should the managers of the basic subdivisions rush about the Union in search of contractual jobs so that there would be something with which to pay the wage to their associates?"

"The second task of the Academy of Sciences today, in my opinion, is the conducting of research of an integrated nature at the meeting point of several fields of knowledge. The third is the elaboration of a concept and strategy of the development of the country. Is the Academy of Sciences taking upon itself such a load? Then there cannot be any subordination to the Council of Ministers."

"For me the basic demands on 'The Basic Principles' follow from the answer to these questions, from them follow the interrelations of the Academy of Sciences with all other departments, sectorial institutes, and higher educational institutions."

"Only it is not worth forgetting that the present principles are the principles of institutes during the transition period," Doctor of Chemical Sciences Mikhail Krayushkin returns the lofty thoughts to sinful ground, "it is necessary to direct attention to today's problems. The

discussion about what we would want to see the Academy like, is too far from the document which occupies us."

"I would like to define more precisely the understanding of 'transience'," Doctor of Sciences Boris Kurashvili of the Institute of State and Law rises. "There are two approaches. One is: let us invent something today, then lie to and sail off somewhere."

"This is no good. It would be better to direct attention to a final model, to which we should come as a result of the transition. That is, in a large number of points of the document it should find specific reflection. There we know what we want. But in a number of points it does not yet, we do not know. For example, it is not clear who will finance us. We will manage with the name 'superior organ or organ that finances the institute.' It is necessary to try to make the document thorough, and not to seek a sovereign who will be able to decide everything. The solution is to establish a system of managing units which will counterbalance each other."

"In my opinion, the director should be elected by the scientific collective and be approved by the superior organ. If they do not approve him, he is appointed acting director, let us assume, for a year, then they repeat the procedure. The academic council is the instance which counterbalances his power. The council settles all scientific questions and finances jobs, while the director should have veto power. The academic council can prevail over him by a qualified majority or through the superior organ...."

Competitors From the Council of the Labor Collective

"But the Union of Scientists has its own points of view on this question," Vladimir Pavlov stated. "Its own ones, because each region discussed this document independently. There is the opinion of the Leningrad Union, there is the opinion of the Union of Scientists of the Ural Department, and there is the opinion of Moscow institutes. I represent the Moscow point of view. The Ural point of view is quite similar to ours. I personally do not agree with the Leningrad point of view. It is possible to express it with the words: 'All power to the academic council!'"

"I consider this point of view to be unrealistic. First, because the Academy of Sciences today is the only healthy organism in the country, which can supervise science. Second, scientific collectives are ill now with the same disease as our entire society—populist illusions. I would not entrust the elitist matter of supervising science to the so-called collective of associates of an institute."

"They are rabble, right?" the ironic question was heard.

"No, they are not rabble. Although the word 'rabble' in journalism is used now in a different way than in Pushkin's primary source. There 'rabble' is not so offensive a word. I am talking about the unhealthy state of

society and of the scientific community in particular. One must not send for a national vote the intricate, ticklish questions that are connected with science. Therefore we, the representatives of the Moscow part of the USSR Union of Scientists, believe that the scientific research institute should delegate the rights of the election of directors to the Academy of Sciences and to its subdivisions. In no case can scientific decisions be made by the so-called STK—council of labor collectives. Incidentally, it, in my opinion, is not needed at all in the council of the labor collective. If the trade union committee cannot decide everything that the collective needs, hence, it is poor."

"Eh, no," Zakharov objects. "The version proposed by you also secures the authoritarian system of the management of academic science. The departments elect the director, the director proposed the composition of the academic council, and then the academic council becomes merely a consultative organ attached to him. It is the quite obvious monopoly management of the institute."

"In our opinion, a certain system of balance should be established—and here it is represented by the procedure of the election of the director. Anyone, including the labor collective, can nominate candidates for this post. The department registers all of them. Then the scientific collective, after hearing the program of the candidates, votes, while the department chooses from among those who took more than 50 percent of the votes."

"And here the election is a conference of the entire labor collective," says Sergey Savinov from the Physics Institute of the USSR Academy of Sciences. "We believe that the people working at institutions of the Academy of Sciences should not feel like feudal peasants. Something also depends on their voice. Are you interested in a specific director being elected? Go, persuade, have discussions with people, make them comrades in arms. But scientists elect the academic council."

"As for the heads of laboratories, the consideration of the opinion of the collective should be carried out by a secret vote."

"Here it has been asked why there is a council of the labor collective attached to the lively trade union committee..." Viktor Asadchikov from the Institute of Crystallography decided to explain the situation. "The times are changing, the days, when far from all the associates of an institute will be members of a trade union and at one scientific research institute there will probably be several trade union committees, are not far off. For example, the trade union of physicists, the trade union of sanitary engineers or electricians.... Moreover, the scientific research institute will soon have a complex financial and economic system, the present trade union committee is not prepared to monitor its management. It is usually accountable to the departmental central committee of the trade union and to the administration, while the

council of the labor collective is not subordinate to anyone, and its attraction lies in this."

"Thus," Academician Kudryavtsev summarized, "the discussion has indicated that the future depends—and, I hope, this will be emphasized in the publication of POISK—on the independence of institutes themselves. The institute itself approves the charter, it also needs to determine what it can do itself and what is delegated to the department or the presidium. And to try to include this in 'The Basic Principles.'"

"I am afraid that publications and round tables alone will be too little for the correct decision," Zakharov says. "Last year representatives of institutes helped the presidium to avoid a very serious mistake in the election and help to elect as deputies to the Congress prominent scientists headed by A.D. Sakharov. Relying on this experience, I believe, it is necessary to enlist representatives of scientific research institutes not only in the discussion of 'The Basic Principles,' but also in the procedure of their adoption. In the end they concern each of us."

"Yes," Vladimir Kudryavtsev agreed, "it would be more sensible that way."

The editorial board supports this opinion and intends to tell the readers how all this will take place.

People's Deputies Propose Scientific-Industrial Union

907A0258A Moscow SOVETSKAYA ROSSIYA
in Russian 18 May 90 p 3

[Article: "The Deputies' Address"]

[Text] A scientific-industrial group of USSR people's deputies has addressed industrial, scientific and economic associations and organizations, enterprise leaders, scientists, engineers, specialists and workers with the proposal of creating a USSR Scientific-Industrial Union which would unite the interests of industrial, scientific, commercial and financial organizations and associations, enterprise leaders, scientists, engineers, specialists and workers. The effectiveness of such unions is confirmed by years of world practice.

The USSR Scientific-Industrial Union should be a fundamentally new phenomenon in the country's social life. Being an entirely independent organization, the union would support the interests of the collectives that join it and, on this basis, would promote economic development and scientific and technical progress in the country. The union is called on to engage in multifaceted economic, scientific, organizational and legislative activity, to coordinate connections between financial and industrial spheres, to carry out innovation work, to participate in the financing of promising and exploratory scientific and industrial programs and in the exchange of technological novelties. The union will coordinate close international economic cooperation among enterprises

and the creation of joint and mixed companies, will participate in the training and retraining of cadres, especially entrepreneurs and managers, will organize international seminars and foreign internships for specialists, and will carry out advertising and publishing activity.

The union would be able to conduct independent scientific studies, expert analyses and broad discussions on various economic and ecological programs and legislative drafts, on promising plans for the development of regions and industries, and on constructing the most important national economic projects, would be able to contribute to shaping public opinion on them and, through the scientific-industrial deputy group, and would support its positions in the USSR Supreme Soviet, as well as introduce legislative initiatives and submit appropriate recommendations to the bodies of executive power.

In our current complex situation, characterized by the establishment of a multi-party system and the unregulated nature of a number of principles of the new federated state system, the USSR Scientific-Industrial Union would be a basis for the consolidation, regardless of social positions and party membership, of all who create material good in the interests of each person, of all peoples, and of the country on the whole.

Separation of Academy, University Science Criticized

907A0299B Moscow IZVESTIYA in Russian 7 Jul 90
Morning edition p 2

[Article by G. Khromov, vice president of the All-Union Astronomical and Geodetic Society: "The Academic Debt. What It Has Cost Science and Society"]

[Text] In recent times numerous public statements, which have not been refuted in earnest by anyone, have forced us to realize that both our science and higher education are in a desperate state. This is a natural structural crisis, which was produced by faulty structural forms and the erroneously formed relations of science with the national economy and gathered over the course of 50 years. The present character of our science was formed as a result of governmental decisions of the middle and late 1930's and, thus, is the offspring of the era of the formation of the administrative command system.

It is quite easy to identify the three main organizational defects of our science, which were programmed by the mentioned statutes. First of all this is the introduction of the unified state system of academic degrees and titles—from candidate to academician with the associated scale of positions and salaries. Then there is the artificial division of science into "research" science—academic science, and "educational" science—VUZ [higher educational institution] science. Finally, there is the giving to the USSR Academy of Sciences of the authority and functions of a union republic ministry, which is formally

responsible for the overall organization of domestic science, for basic scientific research, and for higher education as a whole.

The first of the above-listed steps gave Soviet science the character of a bureaucratic career system of a clearly nomenclatural nature. It is quite easy to distinguish in our official scientific elite, which consists of doctors of sciences and corresponding members and full members of the union academy and republic and sectorial academies, all the regrettably familiar attributes of the state nomenclature. Suffice it to note that a hierarchical rank, which has once been achieved, cannot be reduced out of connection with the actual labor efficiency of its holder. That scientists of the three listed categories enjoy advantages in case of appointments to management posts in science, and, finally, that the members of academies have material and official privileges, which are guaranteed unconditionally and for life by the state.

In its rigid nomenclatural structure our science is unique in the modern world. Well, all of us even know already too well what the fruits of the long-term nomenclatural management of any public institutions are. It is also clear that for many scientists the aspiration to be included at any price in the privileged upper crust in the end subordinates to itself purely professional and even moral interests and values.

It is worth recalling that the division of science into "research" and "educational" science led to the degradation of our higher school, and first of all universities. For many decades they were financed according to the remainder principle and in addition were a field of uninterrupted bureaucratic experiments. The public and scientific authority of scientists of the higher school actually ceased to exist, having been superseded by the authority of the academy elite, which consistently and impudently defended its right to speak on behalf of all science. We are now the only country in the world, in which the status of a university professor has lost all social authority.

Incidentally, a commentary on the widespread assertions about the supposedly unifying role of the USSR Academy of Sciences is also appropriate here. As vast experience shows, the academy is distinguished by extreme departmental egoism and elitist arrogance. Most often it either subordinates other scientific organizations to its dictation or simply ignores their existence....

Having at one time undertaken the duties of not only the highest scientific authority, but also the "secular power" in basic science, the USSR Academy of Sciences developed into an unnatural hybrid of the self-managing scientific society and the state department—with, incidentally, vague responsibility. IZVESTIYA has written more than once about this. But then the concept of the personal responsibility of the numerous executives of domestic science from among academicians, strictly speaking, does not exist at all. It is possible to count on the fingers of one hand the academicians, who have been

punished at least somehow for, say, the failure to fulfill obligations or the purposeless spending of vast state assets. While in these surroundings it is also no customary to begin talking about any reprimands for purely professional offenses like scientific prejudice, monopolism, or primitive arbitrariness.

All these organizational defects, which are oppressing and ruining Soviet science, began to show through clearly starting approximately in the second half of the 1960's, when its postwar extensive development slowed down. It would seem that much could still have been noticed and corrected. Nevertheless, to this day the USSR Academy of Sciences has not come forth with a single major proposal on the improvement of affairs in domestic science and higher education. It preferred to use its authority for the solution of the special problems of its members and influential internal groups, while vigorously blocking any outside attempts if only to raise the question of the urgency of the serious reform of our science. It can be said that an enormous "academic debt" to science and to society has formed.

In such a situation the idea of the organization of the Russian Academy of Sciences, which has already been supported by the corresponding governmental decisions, appeared and acquired popularity. Some public euphoria in this respect is understandable, but is it justified? The well-known public statements of the founders do not leave doubt that it was conceived as an ordinary republic academy with the paternal leadership of the very same union academy. And what is more, as one that lacks influence on the most prominent centers of our basic science in Moscow and Leningrad.

So, in such a case the future is entirely predictable, starting with the establishment of another privileged stratum of the scientific nomenclature and the bureaucratic staff that services it. And ending with the depressing question that inevitably awaits all of us in a few years: Why are things in, it would seem, restored Russian science proceeding so poorly, incomprehensibly, and wastefully? Simply the establishment of another affiliate of the all-union trade fair of scientific vanities awaits us—this time at the expense of the Russian Federation, which is ravaged as it is.

Indeed, strictly speaking, to what glorious historical past do we Russians intend to return? It is necessary to recall that first the Petersburg, and then the Russian Imperial Academy of Sciences, which was founded by Peter I, resembled very little both the USSR Academy of Sciences and any of our republic academies. In contemporary language it would be possible to call the old academy a small complex scientific research institute, which, among other institutions, was subordinate to one of the imperial ministries.

It is another matter than from an official bureaucratic point of view it was "prestigious" to serve in this institution; it is this inherent peculiarity that probably also predetermined the rapid degradation of the old academy, the glory of which had completely faded already by the middle of the 19th century. The academy acquired a sad reputation by the endless struggle of internal groups, against which it was powerless due to the traditional shortcomings of its charter. It is possible to recall the regrettably well-known "German domination," against which M.V. Lomonosov fought unsuccessfully. It endured well, after all, for another entire century.

But by that time the academy had grown poor—in the direct sense of this word—and had lost the respect of the Russian educated circle due to the indifference toward national needs and toward the sociopolitical movements of the reformed era. In such a state it was also inherited by revolutionary power, having acquired, to the sorrow of all domestic science, a new life in the 1930's. So what fragment of its unique historical path is worthy of nostalgia and repetition?

There are no doubts that it is necessary to raise immediately and to develop vigorously science and higher education in Russia. Especially as the boundless Russian province—greater than the two historical capitals—was always a real fountain of talented people and enthusiasts of domestic science. Here it would be necessary to begin with the real revival of our universities and higher educational institutions and with the establishment of new ones where they do not exist.

It is correct that it is most reasonable of all to carry out the development and establishment of new educational scientific production centers in accordance with the regional principle, if only with the involvement of centralized funds. But then it is most natural of all to entrust this work, just as the overall management of scientific institutions, to the organs of local authority, which are being restored. First, however, all of us, who have gotten out of the habit, must again get used to the idea that without advanced science there will be no modern education, no lofty culture, no ecology with health care, and no competitive industrial production.

Will the future Russian Academy be able, perhaps, to assume this educational role? But then it should become a truly democratic one, which is unconditionally open for all recognized figures of Russian science and culture, is accessible for social influences, and, let us particularly emphasize, does not promise anyone any material privileges! This should be a Russian society for the promotion of the development of science and education, which unites all the best intellectual forces of our peoples, and not a republic nursery for the raising of a scientific nomenclature and the breeding of a parascientific bureaucracy.

Formation of National Independent Science Council Advocated

907A0299A Moscow POISK in Russian No 26 (61),
29 Jun-5 Jul 90 p 3

[Letter to the editor under the rubric "Dialog With the Reader": "Do Not Repeat the Mistakes!"]

[Text] The complexity and contradictory nature of the processes, which are now occurring in the country, are placing organs of state government in an extremely difficult situation. By force of circumstances their basic efforts are being concentrated on the settlement of immediate "burning" questions, while obviously inadequate attention is being devoted to problems of a long-range, strategic nature. As a result of this we often have to make numerous adjustments in plans that are already being implemented and to reshape already approved programs. Now a skilled, unbiased analysis of what is happening today in society and a comparison of alternative versions of solutions are lacking most of all. The only means of overcoming these difficulties is to put the intellectual potential of the country to maximum use.

Among scientists of the most different occupations—mathematicians and philosophers, physicists and economists, biologists, historians, and many others—the conviction of the necessity of the quickest establishment of a public council, which it would be possible to call "Science for the Future of the country," is ripening.

Abundant international experience of the activity of similar independent consultative institutions has been gained in the world. They played a considerable role in the formation of the concepts of the long-range development of a number of foreign countries. The most vivid example is the predecessor of the famous American Rand Corporation, a small informal group of prominent scientists, which emerged during the times of President Roosevelt and gathered once or twice a month for the discussion of the most urgent and vital problems that faced the United States of America at that time. This discussion was of a completely free nature, and, although at times Roosevelt himself also attended the meetings, he merely listened to the discussions of the scientists, without interrupting them, while asking questions, it is true, from time to time.

A similar consultative committee under the chairmanship of Academician M. Lavrentyev also existed in the early 1960's in our country. However, its role and importance were substantially belittled by the fact that N. Khrushchev had the opportunity to interfere in the work of the scientists, and he did this particularly often when the committee was discussing questions which, in the opinion of the then head of state, did not merit attention or were considered settled.

The present public council "Science for the Future of the Country" should learn a lesson from the mistakes of the past, namely: it should be a truly independent public organization, but should operate under the patronage of

the President of the country and the presidents of the union republics. The latter means:

- among the problems, which are outlined by the council for consideration, the ones, which have been posed by the presidents, enjoy priority;
- the council informs them of the results and conclusions of all its discussions;
- the presidents by special orders afford council members the possibility of using the data of some information systems or others;
- state organizations cooperate with the council, obtaining in turn access to its developments.

The council, so it seems to us, should unite specialists of different scientific types. The council members should not hold important administrative posts in party, state, or society organs. However, they should be authoritative in their fields of scientific knowledge, have the reputation of independent and decent people, and be capable of relying on their scientific schools, students, and colleagues in forming temporary scientific groups, when the need for this arises.

The question of the procedure of the formation and the charter of the council is a question that requires special discussion.

The council should not have a large staff of associates—only a skilled office, which is supplied with telecommunications equipment, duplicating equipment, as well as a small number of personnel computers, is needed.

The activity of this council will require, of course, some, although not very significant assets for the remuneration of the labor of the staff members of the office and temporary scientific groups. A small special fund, assets for which can be received not only from the President of the country and the presidents of the union republics, but also from the USSR Academy of Sciences, the USSR State Committee for Science and Technology, the USSR State Committee for Public Education, and the governments of the USSR and the union republics, should be established for this.

It would be advisable to accommodate the new council in the building of the USSR Academy of Sciences, inasmuch as it will rely in its activity first of all on academic organizations.

The activity of the council "Science for the Future of the Country" should, of course, be covered in the press: the results of the analysis of the situation in the country should be accessible not only to the managing structures of power, but also to all the people.

[Signed] Academician Vitaliy Goldanskiy, USSR People's Deputy

Professor Anatoliy Denisov, USSR People's Deputy

Academician Nikita Moiseyev

Academician Boris Raushenbakh

Academician Aleksandr Samarskiy

Corresponding Member of the USSR Academy of Sciences Vyacheslav Stepin

Professor Nikita Tolstoy, RSFSR People's Deputy

Koptyug On Changes in USSR AS Siberian Department

907A0295A Moscow PRAVITELSTVENNYY VESTNIK in Russian No 20 (50), Jun 90 pp 8-9

[Interview with Vice President of the USSR Academy of Sciences Academician Valentin Afanasyevich Koptyug, chairman of the Siberian Department of the USSR Academy of Sciences, by PRAVITELSTVENNYY VESTNIK correspondent G. Lomanov: "On the Threshold of the Third Millennium"; date and place not given; first paragraph is PRAVITELSTVENNYY VESTNIK introduction]

[Text] A governmental decree, which approved the strategy of the long-range development of the Siberian Department of the USSR Academy of Sciences and specified the organizational, economic, and social steps that are called upon to increase the effectiveness of its activity, has been adopted. Vice President of the USSR Academy of Sciences Academician V.A. Koptyug, chairman of the department, tells about the new spiral of Siberian science in an interview with our correspondent.

PRAVITELSTVENNYY VESTNIK: Valentin Afanasyevich, when the Presidium of the USSR Council of Ministers was discussing the draft of the decree, along with the deserved praises serious reproaches meant for the department were also heard. Do you not find a contradiction in this?

V. A. Koptyug: Not in the least. In past years much was done for the development of the scientific potential of Siberia, powerful intellectual forces were formed in the eastern part of the country. At the six scientific centers of the department—Novosibirsk, Tomsk, Krasnoyarsk, Irkutsk, Ulan-Ude, and Yakutsk—63 scientific research and design and technological organizations operate. There work at them 72 members of the USSR Academy of Sciences, 800 doctors of sciences, more than 5,000 candidates of sciences, and in all 11,000 scientific associates. Basic discoveries, a large number of world-level technical and technological solutions, 600 major applied developments during the current five-year plan alone—there is something to be proud of. At the same time neither the government of the country nor the government of the Russian Federation nor we ourselves are satisfied with the state of affairs—science could influence significantly more actively the development of productive forces and the socioeconomic development of the oblasts, krais, and autonomous republics of Siberia. Namely this task was at the center of attention of the commission which studied the concept of the long-range development of the department. Specialists of the union Academy of Sciences, State Committee for Public

Education, State Committee for Science and Technology, and State Planning Committee and of the RSFSR [Russian Soviet Federated Socialist Republic] Council of Ministers participated in its work.

PRAVITELSTVENNYY VESTNIK: Thus, one of the strategic tasks is clear—to shorten the excessively long "science—experimental check—production" chain in our country. We have been attempting at least for about 30 years to do this, alas, without appreciable successes. What "tactical innovations" are being proposed this time?

V. A. Koptyug: Well, since we have glanced back at the past, I will recall: the frozen, stiff structure of institutes hindered and is now hindering the increase of the effectiveness of the work of scientists. That is why we regard as one of the important reserves the increase of the independence and responsibility of scientific collectives by means of additional competitive financing in conjunction with a flexible centralized system of the integrated use of these collectives in different combinations. Thus, for the solution of major interdisciplinary problems we have already begun to use structured programs of basic and applied research of the department, which are coupled with programs of the USSR Academy of Sciences and state scientific and technical programs. In the case of strategic, short-range tasks—assume that it is necessary to bring a new development up to a level that satisfies industry or to make an evaluation of a major project—the establishment of temporary special-purpose interinstitute collectives, the members of which are given an incentive after the completion of the work, proved to be very effective. Given base state budget financing these two forms are making it possible to combine the increase of the independence of all the scientific research and design and technological units of the department with effective centralized management.

PRAVITELSTVENNYY VESTNIK: If I have understood correctly, do you want to kill two birds with one stone—having liberated as much as possible the creativity of researchers, to aim it all the same not beyond the clouds, but at the solution of the problems of the region?

V. A. Koptyug: Exactly. For the aspiration for self-expression and for the "extraction" of new knowledge grips every scientist. This is the motive force of basic research, which constitutes the basis of science. But at the same time he has a duty to the state. The interests of a talented intelligent individual and society do not always coincide, and in general it is difficult to find here the optimum combination, especially within the framework of our system of the management of science, which has lost touch with life. We are seeking new, effective forms, but not everything is within our power. That is why we asked the government to grant the department the right to transform large polytechnical institutes into joint scientific research institutes which consist of thematically more similar institutions. They will acquire

legal independence, although they will preserve the general services of management. We regard this means as promising for the development of the institutes of our established scientific centers.

PRAVITELSTVENNYY VESTNIK: But the weakest thing in the chain is precisely the middle link. Here is a typical situation—a scientific result is excellent, but the matter never reaches the point of introduction: give the enterprise a developed technology, a spotless design. But where is one to develop them—in an institute laboratory, perhaps?

V. A. Koptug: Alas, the weakness of the design and pilot technological base is the Achilles' heel of not only the Siberian Department, but also of all academic science. The structural reorganization of our centers is not an end in itself, it is oriented toward the end result—the increase of the pace and scale of the transfer of scientific achievements to the national economy. We are developing the most diverse—both already established and new—forms of interaction with the national economy, but still regard as the main thing the building up of our own base. Today nine design and technological organizations, three pilot plants, and a number of engineering and technical centers operate in the department. But this makes it possible to support with design and technological analysis only a portion of the scientific reserve of the department, which is being created.

PRAVITELSTVENNYY VESTNIK: And you decided to address to the government a request on investments. Now everyone is talking about independence, but as before is striving to cut off a tasty morsel from the budget pie. Like it or not, you will remember the proverb—they found an axe under the bench. Why do you not take a different route—sell the results of research, and with the received money strengthen the design and pilot production base?

V. A. Koptug: We would do it that way, if an adjusted economic system of scientific and technical progress operated in the country. Then the department, apparently, would be able to a significant degree by itself to finance planned construction projects. Although this is the wrong route for academic science: it led to the ruin of basic research. And in applied science it is impossible either today or in the immediate future to implement such a principle in full. There is no market of scientific products, and the profit from their sale in the national economy in practice does not get to institutes. But in many cases it is very significant. Here is an example—last year the Altay Scientific Production Association for the first time in the world began the production of ultradispersed diamonds in accordance with a technology, for which scientific developments of the Institute of Hydrodynamics imeni M.A. Lavrentyev are the basis. The production cost of a kilogram of such diamonds is many fold less than their price on the foreign market, consequently, the profit is very significant. The solution suggests itself—to establish joint ventures with foreign firms and thereby to solve the financial problems. We,

incidentally, have already embarked on this path. I can name the Soviet-West German tomography center, the Soviet-Yugoslav Tseta firm, and the Soviet-Bulgarian Zond Association. I believe that we will be able to obtain approximately half of the assets needed for the further development of the scientific production base of the department through our own enterprises and joint ventures. But we propose, even though to our own detriment, to turn over key developments that revolutionize production to our industry, first of all to that part of it, which is being converted, keeping state interests in mind.

PRAVITELSTVENNYY VESTNIK: By building up the design, technological, and production base, Siberian scientists will obtain a real opportunity to transform the department into a real producer of science-intensive products and its centers into kinds of "technopolises." But structural reorganization will also be required for this....

V. A. Koptug: Undoubtedly. Instead of scientific research institutes NTK's—scientific technical complexes—which include along with an institute a design and technological organization and a pilot works, should become the basic structural units of the centers. Now 10 such scientific technical complexes are already operating in the department. The Institute of Nuclear Physics of the Siberian Department of the USSR Academy of Sciences, whose developments and items, which are used by industry, yield an economic impact of hundreds of millions of rubles during a five-year plan, became their prototype in Siberia. We are glad that the USSR Council of Ministers endorsed the policy of the development of scientific technical complexes. If the Law on the State Enterprise is applied to cost accounting design and technological and pilot production organizations, the interests of their collectives may differ very greatly from the tasks, for the sake of which such organizations are being established, and from the standpoint of immediate interests it is more profitable to "exploit" already assimilated developments than to assimilate newer and newer ones.

The establishment on the basis of a number of institutes, which hold leading positions in world science, of international research centers will help to increase the productivity and prestige of the work of scientists "in the provinces." Significant prospects exist here—thus, scientists of many countries are already working fruitfully at the Baykal Ecological Research Center, although its status thus far has not been officially legalized.

PRAVITELSTVENNYY VESTNIK: At one time much was said about the Siberia Comprehensive Program. Now it is not being mentioned at all. If we speak frankly, has it departed this life?

V. A. Koptug: Not yet, but this could happen. Although the efficiency of the coordination of scientific research within the framework of this program is very high. I will cite as an example the results of two joint jobs, which were performed together with scientists and production

workers of the USSR Ministry of Geology. Last year at the 28th International Geological Congress they were commended among the most important achievements of this science in recent times. The first one is the scientific substantiation of the prospects of the presence of petroleum and gas in ancient Precambrian deposits of the Siberian Platform, which contributed to the discovery of more than 30 petroleum and gas fields, including such ones which promise to be especially large. The second one is the discovery and study in Northern Kazakhstan of inclusions of diamonds in rocks of the metamorphic type, which are not connected with detonation pipes.

However, with the changeover to the new economic mechanism the difficulties in the attraction of assets of ministries and enterprises for the financing of this program began to increase rapidly. Its very existence is actually threatened.

PRAVITELSTVENNIY VESTNIK: Valentin Afanasyevich, perestroyka has revealed serious miscalculations in the location and construction of large industrial enterprises—both from the standpoint of territorial relations and from the standpoint of the ecological risk. Siberia is not an exception, now, in essence, an audit of its entire economic potential is under way.

V. A. Koptug: And we are forced more and more often "to put out fires," although the department has a significant reserve of analyses of the conceptual level. The "fire" nature of the work is due to the rapidly growing number of appeals to them of local organs of Soviet power and assignments of the governments of the USSR and the RSFSR. And whereas previously we dealt with the analysis and forecasting of the development of sectors of industry, krays, and oblasts, today the center of gravity has shifted to specific enterprises, rayons, and

situations. The strategic and long-range demands on science are increasing rapidly.

For the present the department is coping, although with much difficulty, with the avalanche-like flow of assignments on this group of problems. In order to escape from the "fire" conditions, we are striving to lay the organizational foundations of the systems support of the needs of the region for scientific analysis and forecasting. For example, we have launched the ecological certification of large enterprises, at the scientific centers we are establishing subdivisions, which are oriented toward the problems of industrial ecology, specialized ecological databases—you will not list everything.

Incidentally, such interdisciplinary work on the analysis and forecasting of the ecological, economic, and social consequences of major decisions has clearly shown the advantages of comprehensiveness and the territorial separation of the organizations of the Siberian Department of the USSR Academy of Sciences.

PRAVITELSTVENNIY VESTNIK: But "blanks" have also been detected, judging from the fact that would consider it necessary to establish another three scientific centers....

V. A. Koptug: They are actually necessary, and we are grateful to the government for support. The new centers will be established in Tyumen, Kemerovo, and Omsk. The appropriate manpower base and a certain material base were established in these cities in preceding years. But additional capital investments and assets for scientific research work at needed for its development. The new centers will be oriented toward the scientific problems of petrochemistry and gas chemistry, the coal industry, and coal chemistry, as well as machine building.

Increased Wages, Profits Fail To Improve S&T Work

907A0257A Moscow NTR TRIBUNA in Russian
No 7-8, 27 Apr 90 pp 12-13

[Article by A. Kulagin, deputy chief, Department for Scientific and Design Organizations, USSR Goskomtrud: "They Love Counting the Money"; passages in boldface as published]

[Text] The letters to the editors, relating to the article "Easy Money" in No 22 3A, 1989, are taking on an ever clearer social coloring: cost-accounting in science is, in the end, the specific earnings of specific people, the raising (and, in a number of cases, also the lowering) of their standards of living.

This suggested that we seek the opinion of a specialist on labor and social issues, A. Kulagin, deputy chief of the Department for Scientific and Design Organizations, USSR Goskomtrud:

Onward and Upward

Consider: in scientific organizations that had converted to the new conditions of economic management (full cost-accounting and self-financing, new methods of financing and economic management, etc.), earnings grew sharply in 1988-89, as is quite clear from the table:

Change in Earnings for Employees of Scientific Organizations in Production Sectors, 1987-89

	Roubles per Month		
	1987	1988	1989
Scientific Research Institutes and Design Bureaus	202.0	240.8	345.5
PIO	221.0	312.7	409.6

One first asks if this increase is warranted?

The range of answers is unusually broad, from keen pessimism to enthusiastic optimism. It is curious that the positions of specialists in the study of science and of economists who study the problems of financing science and the organization and payment of labor, in my opinion, are closer to pessimism. In this regard, the opinion of V. Felzenbaum is quite typical. Most scientific employees believe that everything is proceeding normally, that the "present-day increases are a kind of compensation for the many years of chronic underpayment" (as expressed by Ya. Torchinskiy (UkrNIInzh-proyekt), NTR, Nos 3-4, 1990), as a consequence of a sharp increase in the volume of work and in its quality.

Let us try to investigate this impartially.

The first thesis: after converting to cost-accounting, scientific organizations sharply increased their volume

of work. (V. Felzenbaum cites a 68 percent increase). Where did such a solid "makeweight" come from?

For instance, at the USSR Minlesprom Central Scientific Research Institute for Paper [TsNIIB], the work volume increased from 3.6 million rubles in 1987 to 9 million rubles in 1989.

However, only nine percent of the work in this 9-million amount was aimed at creating new types of equipment, and 31 percent—new technologies. Meanwhile, 60 percent of the work amounted to the circulation of old developments, provision of information, consultation, technical assistance, etc. It should be taken into account that, after converting to cost-accounting, amortization and profit began to be included in the work volume. If all this is compared, we can conclude that a reduction in the volume of NIOKR, not growth, actually occurred.

Planned profitability in the TsNIIB was 25 percent, but in fact in many cases exceeds 75 percent. Indeed, this is also understandable. Labor outlays for circulation are insignificant. Precisely for this reason, it has become widespread. Old work, including that previously done at the expense of budget funds, and even the development work of others are being redistributed at contract prices.

The fact that the amount of work being repeatedly introduced has increased sharply is generally positive. Not one of the wealthiest countries could allow itself to perform development work completely anew for every customer.

The problem is that the funds received in this regard for the payment of labor, as a rule, are entirely out of proportion to the real outlays for repeated transfer of scientific and technical production. The USSR GKNT [State Committee for Science and Technology] in February, and the USSR Gosstroy, in September 1989, gave the appropriate interpretations. However, first, this was done considerably late, and second, in many cases people simply ignore these interpretations.

At the VNII [all-union scientific research institute] for Fertilizers and Insecto-Fungicides of the "Agrokhim" Association, one of the previously fulfilled methodologies was re-worked as applied to the conditions of a specific customer. The contract price was 10,000 rubles. One specialist did the work in the course of a day. More than 6,000 rubles, of which this specialist received about 3,000, went into the institute's wage fund. Can we speak seriously of real conformity of labor outlays (even taking high skills into account) to such a high wage?

So, on the whole, we are forced to verify that the increase in the work volumes of scientific organizations is actually fictitious. It is only an increase in cost. Enjoying a monopoly position, most organizations significantly raised the profitability of development work when determining contract prices, increasing the prices without grounds by introducing various supplementary additions and coefficients, essentially padding the cost of the work.

Are there exceptions?

There are, including the "Spektr" NPO (Moscow), the engineering center of the Nikolayevskiy Ship-Building Institute, and several others. However, the exceptions merely confirm the general rule.

The Mysteries of the Level of Development Work

The second thesis: after converting to cost-accounting, scientific organizations are more closely linked to the needs and problems of the customer, ensuring an increase in the level of development work.

The USSR Law on the State Enterprise calls for a high level of research and development work and the mandatory conformity of the production being sold (work, services) to the highest world level.

One could spend masses of time arguing how to define this ill-starred world level in each specific situation, especially as applied to basic, economic, ecological and other research.

The methodology for evaluating the technical level of industrial production, released by the USSR GKNT after long delay, simply does not take the majority of problems into account.

Who specifically should evaluate the level of development work (not production, but precisely development work)?

Is it possible to evaluate only the technical level? What if the development work is technically perfect, but too expensive? Would it not be more appropriate to assess both the technical and economic levels?

What if there are no similar world models?

How do we evaluate the technical level of prototypes? And so on, and so on, and so on...

They can say that a special statistical method for determining the level of development work has already been functioning for years. Indeed, this is true.

However, if we are to believe these statistics, they attest not to an increase, but a reduction in the technical level and quality of development work after conversion to the new conditions of economic management.

For scientific, design and technical organizations on the whole, the share of work exceeding the world level, which was 12.5 percent in 1988, decreased to nine percent in 1989. The number of capital construction projects rejected by expert authorities in connection with imperfection and low technical level has increased significantly.

The requirements of the Law on Enterprise on the whole are justified. If they are not observed, the country will never advance to the leading edge.

So, what follows from this?

The Law on Enterprise directly requires reducing the size of the material incentive for leaders of scientific organizations who have allowed the transfer into production of output not conforming to the world level. However, the ministries and departments, obviously afraid of criticism, have alienated themselves from control over the scientific and technical level of development work done by their subordinate organizations. Due to their permissiveness and often with their direct participation, the sizes of bonuses and other incentives for the leading employees of organizations are raised illegally. Most often, the customer is simply in no position to evaluate the level of the work.

Thus, both of the most widespread claims explaining the growth of earnings are simply false.

At the expense of what have they managed to raise the average earnings of employees in scientific organizations?

Let us return to the example of the TsNIIB. The average monthly salary grew from 254 rubles (1987) to 405 rubles (1989). What was the source? In 1987, the share of outlays for the payment of labor at this institute (i.e., in practice, the standard for forming the wage fund) in the overall volume of financing was 42.9 percent. After USSR Minlesprom converted to the new conditions of economic management, the norm for forming the wage fund was set at 50.6 kopeks per ruble of contract cost, while another 40 percent of the institute's profit went into the material incentive fund.

Thus, without additional exertions, the institute had significant additional resources for the wage funds at its disposal. Let me add that most institutes required advances from the customers in 1988 and 1989. In most cases, according to our data, the advances exceeded 40 percent, but there were also cases of 100 percent. Thus, the work might not be done yet, but the organization has already received solid funds and has paid them to the development workers.

Some organizations have started to perform functions not at all inherent to them. Thus, the Central Institute for Standard Designs under USSR Gosstroy is printing popular literature (D. Carnegie's *"How to Stop Worrying and Start Living,"* and others) at cooperative prices in its own printing-house. Some agricultural scientific research institutes are selling their experimental production at kolkhoz markets, etc.

Having received additional funds for the payment of labor, naturally, organizations have begun to spend them.

The payment of significant but, in fact, unearned funds has negatively affected the entire material incentive system. They have begun to distribute funds for the payment of labor, received as a result of raising prices and errors in defining standards, in the form of various additional payments "for increased work volume," "for economizing on wage funds," "for reducing the number

of employees," etc., which is a gross violation of existing legislation. The indicators and conditions for awarding bonuses to employees in many cases orient them only toward the fulfillment of volume indicators. Incentives for quality in design and development work have essentially come to a halt.

Direct violations of existing legislation have been permitted in a number of organizations. For instance, there is one form of compensation based on the year's work results (wage 13). Even from its name, it is clear when this should be paid. On the insistence of the labor collectives in some organizations, this compensation is being paid in August, September and October, i.e., long before summarization of the year's results.

In 1989, the share of increased earnings in science comprised 15 percent of the overall increase in the national economy, although it makes up only 6 percent of the overall volume of the wage fund. This would be no problem, if the country were in a stable economic situation.

Taking into account the specific situation, the expanded scale of group egotism, to the detriment of state interests, has in many ways influenced the weakening and violation of economic ties and has aggravated the economy's imbalance and monetary circulation.

However, this is only the underwater part of the iceberg.

The Big Earnings of 'Small Science'

For two years, along with state scientific organizations, a fairly extensive network of scientific and technical cooperatives, NTTM [scientific-technical creativity of youth] centers and temporary creative collectives (VTK) has been created under the VOIR [All-Union Society of Inventors and Rationalizers] and NTO [Scientific and Technical Society] organizations. Colossal and virtually uncontrollable funds flow through this "small science."

For example: in March 1988, the "Eko" Company was formed under the presidium of the UkSSR Board of the All-Union Economic Society.

On contracts for agrochemical services for kolkhozes and sovkhozes, this company received almost 153,000 rubles as a result of raising prices. This enabled the members of the VTK, headed by N.B. Dontsov, laboratory chief at the UkSSR AS Institute of Plant Physiology and Genetics, to receive extra compensation in the sum of 77,000 rubles. N.B. Dontsov himself, also a VTK member, was paid 47,300 rubles. A curious detail: Dontsov concealed the receipt of these funds when paying his party dues.

How could the customer accept this work? Very simply: they included the customer's representative in the VTK and paid him a corresponding sum.

The "Eko" Company received 75,000 rubles, including 45,000 for payment of the VTK, to perform an express-analysis of the activity of the "Agrotekhpishcheprom-servis" Association. Of these funds, about 1,500 rubles were paid to the chief bookkeeper and to the head of the planning department of the customer association, respectively, G.S. Yermolenko and L.A. Pankratova.

In most cases, work in the "company" was done on the same subject matter and at the same time as the basic work.

As a result, in 1989, 34 "Eko" employees received from 4 to 5 thousand rubles, 51—from 5 to 10 thousand, 24—from 10 to 20 thousand, and 3—more than 32,000 rubles.

The natural question is who approved all this ugliness? Let me answer: the board of the republic department of the VEO, headed by its chairman G.V. Dzys, deputy chairman of the UkSSR Council of Ministers. Moreover, apparently, the "Eko" Company was released from payment of taxes at the end of 1988 due to its "great services."

The main question is what to do?

In my opinion, we should not reject the basic principles of cost-accounting in science. It is another matter that they need to be corrected. The "administrative-command measures" which were taken, including the suspension of cost-accounting in the USSR Gosstroy scientific organizations and the limitation of profitability to 30 percent, of course, were not among the most popular, yet these measures are necessary in the transitional period, so long as changes have not been made in the infamous CPSU Central Committee and USSR Council of Ministers 30 September 1987 resolution.

As everyone knows, the Second Congress of USSR People's Deputies has passed the government program of measures to improve the economy.

Proceeding from this program, which measures should take first priority?

Above all, we must introduce a procedure to account in full for the completed scientific and technical production received by a customer.

Second, laws on intellectual property and authors rights to scientific work are urgently needed. The right to utilize development work, including the right to distribute it, should be possessed only by its owner. I believe that a customer who has paid in full for work should become its owner, and the developer, having sold it, should lose his right of ownership over it.

At the same time, we must introduce strict economic sanctions against illegal use (by non-owners) of the results of NIOKR.

Investigations show that the absence of a law on the ownership of the results of scientific development work

leads to uncontrolled use of said results by those who have no right whatsoever to this, especially by scientific and technical cooperatives, scientific and technical youth creativity centers, and other so-called "small forms of science."

Third, we urgently need a market for scientific and technical production. Two years under cost-accounting conditions have not brought us much closer to it.

Unfortunately, the extensively developed network of scientific and technical information agencies has turned out to be incapable of gathering clear information on finished developments, on their parameters, costs, etc. There is no more important element in a market economy than information.

In the construction system, there are departmental and extra-departmental expert analysis agencies (true, far from all projects undergo expert analysis). Expert analysis of NIOKR is entirely lacking. As a result, a large amount of poor-quality development work has appeared "on the market." In any case, I can confirm this with full certainty for developments of an economic nature (resolutions on intra-cost-accounting, awarding bonuses, etc.). There are no assurances as to quality of production, the second most important element of a market, and no competition in quality. However, in terms of quantity of development work, we could probably be listed in the *"Guinness Book of Records."*

As far as projects that have not undergone expert analysis are concerned, it is simply dangerous to build them. I deem it expedient to prohibit all forms of construction, including individual, which use project documentation that has not received a positive assessment from an expert analysis agency.

Apparently, it is no use establishing special control over price-setting for scientific and technical production. However, we do need a direct dependency of prices on the effectiveness and quality of development work. Since the effect appears only after application, we should convert to a "royalty" principle.

Turnkey!

Fourth: the customer's responsibility must also be increased. Today, he can virtually shelve the work without suffering any consequences. The labor collectives, under conditions of the impossibility of turning money from their development fund into goods, are peeking at the increased prices through their fingers. If we did not have two forms of money (in the wage fund versus in the development fund), different in terms of their economic nature, the problem would automatically be resolved. Meanwhile, for purposes of raising the responsibility of enterprises and associations for the efficient use of scientific and technical production, I deem it expedient to establish that in cases, in which the development work acquired by a customer enterprise from scientific, design and technological organizations is not applied within a standard period of time, not to

exceed two years, the customer will pay a fine into the budget in the amount of the cost of this development work out of its own income (profit). Possibly, we should think about paying for scientific and technical production not from the development fund, but from profit.

All these measures must be passed now, in order to start the new five-year period with a corrected economic mechanism.

In the future, we must convert to a "turnkey" principle. To what am I referring?

If I represent the interests of an industrial enterprise's customer, and I need a machine tool with certain technical parameters, today I must pay separately for the scientific development work, then for the experimental design work, then for the technology to manufacture this machine tool (note that there is still no machine tool, but already I am making rather significant expenditures). Only then can I seek a manufacturer for the machine tool. At this time, it becomes clear that the developed (and, you note, paid for) technology is not appropriate for this manufacturer, so I must pay for the re-working, and so on.

Apparently, it would be appropriate for the customer to pay the manufacturer personally for the machine tools, and the the manufacturer himself should seek developers and include the cost of NIOKR in the cost price of the machine tools.

Second, the CPSU Central Committee and USSR Council of Ministers 30 September 1987 resolution, for purposes of raising the effectiveness of work by scientific organizations, called for the consistent introduction into work practices of a system for concluding contracts between the administration and groups of scientists or individual specialists for doing scientific, technical and experimental design work. We have spent almost two years studying what exactly a contract is. Our country had no practical experience. This year we will conduct an experiment in approximately ten organizations. According to its results, we intend to find a certain acceptable document.

However, this is a topic for special discussion. If NTR readers are interested, it might be useful to continue it.

Moscow Self-Financing Experiment Evaluated

907A0260A Moscow TEKHNKA I NAUKA in Russian
No 4, Apr 90 pp 27-27

[Interview with A. Yenukashvili, director, Moscow Oblast Center for Scientific and Engineering Services, by correspondent E. Sorkin: "The Balashikha Managers"; first four paragraphs are TEKHNKA I NAUKA introduction; passages in boldface as published]

[Text] The Moscow Oblast Center for Scientific and Engineering Services (MOTs NIU), created under the

USSR SNIO [union of scientific and engineering societies], has been operating in the Moscow suburb of Balashikha since 1987. The priority directions which the center works on include: intensification of heat-and mass-transfer in power engineering on the basis of the self-organizing waterspout-forming flows of a liquid and gas; research in the field of membrane engineering and technology; the creation of laser technologies and systems; and the development of unique systems for collecting and processing scientific data under extreme conditions.

In addition, the center solves urgent production problems.

In its resolution, the presidium of the board of the USSR SNIO positively assessed the results of an experiment to develop cost-accounting activity, conducted by the Moscow Oblast board of the SNIO, and approved the activity of the MOTs NIU.

Our correspondent visited this center and interviewed its director, A. Yenukashvili.

TEKHNIKA I NAUKA: The Moscow Oblast Center, as far as I know, is the first center of its kind organized under the SNIO. Please, tell us how it all began?

A. Yenukashvil: It started when I was called to the party obkom. At that time, I was working as a leading designer at the "Kriogenmash" NPO [scientific production association]. They suggested, so to speak, putting me on the ballot for the post of director of a scientific and technical services center that was being created. The SNIO and the obkom were also considering four other candidates. However, as you can see, I was approved.

TEKHNIKA I NAUKA: What are you by training and, if it is no secret, why were precisely you chosen?

A. Yenukashvil: I am a mechanical engineer and had worked at the "Kriogenmash" NPO for 28 years. Before that, I had worked at a different enterprise as head of a shop which had converted to cost-accounting, so I had some experience with organizational work under cost-accounting conditions. This probably decided the matter.

TEKHNIKA I NAUKA: In your opinion, what forced the SNIO, in addition to the party bodies, to organize these cost-accounting collectives?

A. Yenukashvil: In brief, life itself forced them. Because of the universal bureaucracy and monopoly of state institutions and all the departmental barriers, interest in truly creative labor is fading. Our engineers' work has been equalized. Their creative potential had to be liberated. In my opinion, the second reason was the humane nature of our society: after all, every one of us has the right to a job, even a useless job.

TEKHNIKA I NAUKA: What exactly do you mean?

A. Yenukashvil: Really, it is simple: the design, engineering and scientific organizations were forced to keep

both the untalented and the lazy, since it is impossible to dismiss them, there being no such laws.

TEKHNIKA I NAUKA: A pessimistic picture... This means that your center acts as a kind of separator. How do you organize your work?

A. Yenukashvil: Naturally, I started by choosing competent and active associates. There are only five people in our administrative apparatus. However, we recruit up to 3,500 engineers and specialists for creative work. Three-hundred thirty enterprises, institutions and hospitals in the oblast use our services. By the end of last year, our volume of services amounted to over 9 million rubles. We have fulfilled about 300 contracts, amounting to more than 3.6 million rubles.

TEKHNIKA I NAUKA: Could you characterize the subject matter of these contracts?

A. Yenukashvil: It would be hard to list them all: in material sciences, for instance, there is research on protective layers in integrated semiconductor circuits; instruments for scientific research, particularly standing equipment for testing thermal insulation; computer equipment, including software for NC machine tools; and also medical and ecological development work, for instance, the improvement and correction of ventilation systems....

TEKHNIKA I NAUKA: All the same, how do you get reliable information both on the existence of scientific and technical problems somewhere which require solution, as well as on specialists capable of competently solving them?

A. Yenukashvil: First, it helps that our founder, the SNIO, unites engineers and specialists from most diverse fields. We maintain close ties with the NTO primary organizations, and we can utilize both the sectorial boards and the central bodies of the SNIO in order to recruit the necessary specialists. Of course, experience has also taught us how to find the necessary creative people. Personal connections and professional contacts are important here as well.

TEKHNIKA I NAUKA: It would be interesting to hear of some specific examples of your efforts to solve production problems.

A. Yenukashvil: It often happens quite simply. The director of an unprofitable dairy sovkhos from Moscow Oblast, a young, energetic and exploratory person, came to see me. He said: "I want to reorganize the farm, to stir people up and introduce new forms of labor organization. Help us put this on firm economic footing; develop a specific plan of action for us." We helped them organize a VTK [Temporary Creative Collective]. Clearly, it needed a lawyer, an agronomist and, mainly, a good economist. Who should we choose for the VTK, an experienced specialist in farm economics? He, however, is already used and accustomed to everything. We needed someone with a fresh point of view. So, I chose

an industrial economist. The economist developed such an effective system for brigade leasing and reciprocal calculations that after a year the sovkhos ceased to be unprofitable, and people there were released. Thanks to this, the director was even able to organize a mushroom farm. Now he wants to build a cheese-making shop. He recently visited us and said: "Before, if you happened to stop in at the garage around 11:00, all the machines would still be standing there, the drivers would not be rushing off anywhere. Now at 7:00 AM there is no longer anyone there: they are all at work."

Yet another example: at an enterprise which makes components for important instruments, defective products had always been a problem. It had to produce more parts by a factor of two or three, causing significant losses. It was clear to the plant engineers that the cause of the defective products could be found and eliminated, if they could use expensive diagnostic equipment and hire the appropriate specialists. However, where could they find these?

Our center undertook to help them. We discovered that the necessary equipment was being used at a particular enterprise and suggested that its specialists assist their colleagues in their non-working time. A VTK was organized and the cause of the defective products was soon found. Eliminating the cause cost 30,000 rubles, while the losses due to defective products had amounted to 60,000 rubles monthly.

TEKHNIIKA I NAUKA: In short, everyone was satisfied. Yet, are there not disputes with VTK members regarding payment for their labor?

A. Yenukashvil: There are no disputes, but rather, different approaches to the principles for paying for engineering labor. For instance, the following case: an enterprise that makes furniture nails needed an automatic device to fasten plastic caps. We have no such automatic machines, which means it was necessary to find designers to create them. I, so to speak, spread out my network: some young engineers came to us. They immediately asked, in a business-like manner: How much will this cost? I said "1,500 rubles." They estimated how much they would have to work and for how long, and then turned it down on the spot. Yet, I found other, more experienced engineers. The three of them produced the drawings in a week and were quite satisfied with the pay.

TEKHNIIKA I NAUKA: What if you had not found more experienced engineers? Would this have forced you to come to an agreement with the enterprise for higher payment for the design work?

A. Yenukashvil: No, this is ruled out, because we pay only according to the state price list. This scares away the sharp youngsters who are trying to get more. For instance, some young engineers came to me and said: the chief engineer at a certain plant is wants us to develop a certain technical improvement and is allocating 50,000 rubles for this. As an intermediary, our center would get its share of this 50,000. I started calculating the cost of

the work according to the price list, and saw that it is only worth 5,000. When I informed the "sharpies" of this, they were perplexed: the chief engineer will pay 50,000, so why refuse it? So, they left with their proposal to look for more obliging managers...

TEKHNIIKA I NAUKA: Did they find any?

A. Yenukashvil: I am sure they found cooperatives or an NTTM [scientific-technical creativity of youth] center. Incidentally, 70 percent of the overall sum there goes to the executors. In this regard, we cannot compete with them. That happens to be why we are often forced to serve not our own, nearby oblast customers, but distant customers, for instance, from Fergan.

TEKHNIIKA I NAUKA: Yet, this is still incomprehensible. Where did the "sharpies" come up with 50,000, when you estimated 5,000?

A. Yenukashvil: That is the secret of that particular chief engineer. Incidentally, there is no secret at all, if you assume that he had an agreement with the designers who came to me, to the effect that part of the payment would go to him.

TEKHNIIKA I NAUKA: Excuse the immodest question, but have you and the employees of the center no need to distort certain coefficients? Are you content with your earnings?

A. Yenukashvil: Our earnings are fixed. As director, I get 380 rubles, and apparatus associates get an average of 250 rubles. It goes without saying, we depend on the final results of work, and our output per administrative worker reaches a million rubles annually. However, we have no right to raise our salaries. The bank will not give us the money for this. So, even though we have earned the money to justify our salaries up to 1992 already, and we can cover it right now, we cannot yet do anything with it for two years. However, speaking seriously, it is apportioned as follows: 35 percent of the center's gross income goes to the state treasury; another 15 percent goes to the SNIO budget; and the remaining cost-accounting income is spent on two basic things: the smaller share goes for apparatus salaries (3.5 percent), and the larger share goes into the development fund. Precisely these funds make the center a full-fledged participant in the country's economic life and enable it to conduct its own scientific, economic and creative activity. In particular, the center forms its own innovation fund out of this. The results of research and development work performed at the center's expense become its own intellectual property and, in turn, might bring a large profit. Obviously, under our economic conditions this form of work sharply accelerates the introduction of scientific and technical, economic and other innovations.

TEKHNIIKA I NAUKA: Yet, nonetheless, does it not seem strange to you that precisely under our economic conditions the country's engineering corps needs cost-accounting centers, such as yours, as well as scientific

and technical cooperatives and NTTM centers, in order to apply its creative forces? After all, more engineers are employed in our economy than in the U.S. by a factor of 2.6: 5 and 1.9 million people, respectively. One-fourth of the world's scientific employees work in the USSR. However, can we say that our advantage in numbers transfers into quality? Everyone knows that only 4.2 percent of our output conforms to the world standard. Does this not indicate the extremely low yield of engineering and scientific labor?

Moreover, having relocated (willingly or no) the center of engineers' business and creative interests from their native design bureau to a cooperative or temporary creative collective with virtually nothing but office equipment, neither an experimental base, nor powerful computer equipment, can we count on rapidly advancing to a world technical level?

A. Yenukashvil: Of course, you are right to raise this question. My engineer friends tell me roughly the same thing: if we engineers in the state organizations (plants, scientific research institutes, and design bureaus) were given the same rights that you have, we would achieve far greater results, having our own technical, experimental and testing base. They are right, but how can we do this if conversion to real cost-accounting on a state-wide scale is still impossible. After all, there is not yet even a law on ownership. So, our activity in this transitional period is still quite necessary and useful.

However, we must take into account that an engineer is a creative person. He cannot think only within the bounds of the working day. On arriving home, he remains an engineer. Why should he not, in the form of intellectual recreation, think about a different problem, one that we have proposed for him? The point, let me tell you, is not just additional earnings. Sooner or later, most of them lose interest in it. Our state will be forced to pay engineers (of course, genuine engineers) as much as they earn, let us say, in the U.S. Incidentally, many of ours are engineers only on paper.

There is still the problem of our primacy in terms of their quantity, but lag in their quality. So, money is not the only problem. A creative engineer will use his free time for intellectual activity entirely selflessly, out of love for his profession. Here you are right: in the future, cost-accounting centers like ours will obviously be unnecessary. I for one will be happy to welcome their disappearance. There will be entirely enough such public organizations, structured on voluntary principles, such as sectorial engineering societies and the SNIO. They will organize the activity of engineers, selfless work aimed at benefiting domestic engineering, in their non-working time.

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Problems With Financial Controls Over Soviet Science

907A0302A Moscow POISK in Russian No 26 (61),
29 Jun-5 Jul 90 p 3

[Article by Academician Vladimir Nakoryakov: "This Is the Fate of Perestroika"]

[Text] However sad it is to admit, the lag of the material base of our academic science has reached a catastrophic scale. The supply with instruments and computer hardware in our country is significantly worse than in developed countries. Unfortunately, such a depressing situation does not prevent V. Kazakov, chief specialist for science of the USSR State Planning Committee, from believing that in our country matters are not at all bad. And within respect to some things they are even better than in the West! He recently compared exceptionally skillfully the assets that are allocated for science in the USSR and in developed countries. Whoever is if only a little familiar with our science, can only wonder in reading the like.

It is astonishing that they appraise the problem that way not just anywhere, but in the main state organ for the financing of science—the consolidated department of scientific and technical progress of the USSR State Planning Committee. Although it is well known: In the past 10 years the level of the supply of our partners abroad with electronic equipment has increased appreciably, while our base budget financing has decreased. There is no need at all to talk about the quality of domestic electronic and optical equipment.... Hence, too, the results.

Many institutes of the physical technical and chemical technology type of the Siberian Department of the USSR Academy of Sciences are attempting to correct the situation by increasing the number of economic contractual jobs. At several of them budget financing comes to less than 30 percent of the total amount. This is making it possible to improve somewhat the supply and quality of units, stands, and apparatus, but is leading to the diversion of associates from their main activity and to the razing of the foundations of academic science. Do we win or lose in this way, by introducing economic contractual activity at scientific research institutes?

Having followed an example from American science, the Academy of Sciences is now developing financing through the system of subsidies—so-called grants, when significant loans are allocated for new projects and fresh ideas, which are capable of yielding interesting results.

The system, undoubtedly, is progressive, but only for applied, technical, and basic applied sciences. As for academic science, given the existing network of institutes the predominance in financing of the system of grants can displace real science and make it a step-daughter among the numerous cost accounting themes.

I believe that academic science for the most part should be financed traditionally—through the budget—and significantly more generously than now. Someone will consider such an approach conservative, but it is impossible not to understand that the themes of basic science will never be able to compete successfully in short-term effectiveness with applied themes.

But now it is possible to judge from just the names of the priority academic programs what orientation they have: "Ecologically Clean Power Engineering," "The Fundamental Increase of the Efficiency of Power Systems," "The Increase of the Reliability of 'Machine-Man-Environment' Systems," "New Materials and Substances Are the Basis of the Development of a New Generation of Equipment and Technology and the Solution of Social Problems." In my opinion, jobs of such a type—an applied type—could become a zone of the interests first of all of the State Committee for Science and Technology. The programs of the Academy of Sciences should have a different ring: "Turbulence," "Elementary Particle Physics," "The Physics of Combustion," and the like.

What is the result at present? A certain group of scientists has formulated programs, frequently for their own organizations, has established expert councils, and has cut off from additional financing entire organizations with original scientific directions. There are many examples of this.

Along with the practice of financing the training of talented scientists for academic institutes is causing anxiety. Science is made by young people, but by what are the occupational and staff advancement of young people and the attraction of capable minds to the Academy of Sciences being supported?

The existing hierarchy in the form of a ladder—junior scientific associate, scientific associate, senior scientific associate, lead scientific associate, laboratory head—is not conducive to this. Having carried over entirely to science the American system from lieutenants to generals, we completely bureaucratized everything and

made the academic institute a very unattractive structure, where all occupational advancement is determined by seniority, not the quality of labor.

Here we are looking at the already hackneyed theme of the obsolete system of the organization of academic institutes and the assertion, which has become a commonplace, that our institutes are too large, inflexible, and stagnant. However, nothing has been done on this level, as before there are more and more institutes, the number of associates at them is also increasing. The system of the organization of work has not changed for decades.

But it is not mandatory to undertake the treatment of this abscess by radical means—to dissolve, to shut, to reduce. It is possible to improve what in this way does not suit us. What is more, there is the experience of the United States, which confirms that a large scientific institution is capable of operating no less efficiently than a small one. An example is the Holifield and Livermore laboratories, which have 3,000-4,000 associates each.

It is possible to obtain a far great efficiency of our classical institutes by introducing such simple things as the possibility of the free transfer of an associate from one laboratory to another with the wage fund, the establishment of new laboratories for new ideas, and the giving of financial independence to laboratories and divisions, transforming large scientific collectives into federations of independent, comparatively small subdivisions.

For long years we lived in a system of strict financial control on the part of planning auditing organs and should have fulfilled all the requirements with respect to the "spreads," "networks," and "rates." Fortunately, these restrictions, though slowly, are being lifted, it is true, all the same we cannot compete with scientific and technical cooperatives in the ability to maneuver our resources flexibly. Several of them are quickly gaining strength precisely due to their flexibility. Consequently, the time has come for classical academic institutes to modify their activity. Otherwise they will not stand up to the competition. It is time to understand: The fate of the nation is the fate of perestroika.

USSR AS Far Eastern Division Unable To Elect New Chairman

907A0303A Moscow POISK in Russian No 26 (61),
29 Jun-5 Jul 90 p 1

[Interview with Academician Yuriy Aleksandrovich Kosygin, by POISK correspondent V. Oshchenko (Vladivostok): "An Appointment Against the Background of a Split"; date not given; first two paragraphs are POISK introduction]

[Text] Shock—you would not call otherwise the reaction, with which the news that at the Far Eastern Department of the USSR Academy of Sciences they were unable to elect a new chairman, was greeted by the scientific community. Of the named three candidates none gathered a sufficient number of votes. An outsider would say: So what? They will get along without a chief. Scientists know: Although their surroundings are reputed to be democratically disposed, without a director and coordinator of work confusion will result.

It is logically that, fearing the complete disorganization of the activity of the Far Eastern Department of the USSR Academy of Sciences, President of the USSR Academy of Sciences G. Marchuk gave the powers of chairman to Academician Yu. Kosygin—up to the new election, which should take place in December of this year. There are appointments, on which people do not express congratulations, but with regard to which people reflect. It is this that our correspondent V. Oshchenko asked Yuriy Aleksandrovich Kosygin to do....

Yu. A. Kosygin: The situation is not as simple as it might seem. The large academic subdivision is falling into a state of disintegration by no means due to the fact that the votes were divided between Academicians V. Ilichev and G. Yelyakov. Alas, this split is merely a reflection of the difficult, involved, and contradictory processes that are tearing science of the Far East to pieces. At the basis of these negative phenomena is the inadequately thought out personnel policy. The Far East is a less comfortable place to live than the western regions of the USSR. In the 19 years of existence in this region of the country of various structures of the USSR Academy of Sciences—an affiliate, a scientific center, a department—several first directors have been replaced here. On the average each of them worked here less than five years. This is a completely inadequate period for the organization of work in science. The kaleidoscope of leaders gave rise to a constantly changing set of priorities, while this led to organizational costs. In my opinion, too many institutes, which are dragging out a miserable existence and are not provided with work premises, housing for associates, equipment, and—the circle closes—highly skilled personnel, have been opened in the Far East.

In Khabarovsk three institutes make their quarters in one building. Sakhalin marine geologists and geophysicists are quartered in a building that was erected by the Japanese back before 1945. Assets were not found for the development of these scientific institutions, while in

Vladivostok the opening of newer and newer institutes, which are even more poor and weak, continued.

Recently I halted the establishment of a large number of other research institutions. Why? First it is necessary to reinforce the already existing institutes. And, as experience shows, about 10 years will be required for this. It does not make sense to open new ones during this time.

Moreover, many institutes are very swollen. The staff of the presidium of the Far Eastern Department is exceedingly large—196 people. All this is merely hindering the normal activity of academic science in the Far East.

POISK: In such a case was not the establishment several years ago from the center of the Far Eastern Department of the USSR Academy of Sciences premature?

Yu. A. Kosygin: In my opinion, there is no difference in principle between the concepts "scientific center" and "department." The obtaining of a higher title hardly specified any qualitatively new stage in the development of science of the region. The entire difference lies in the establishment of new positions, in the equation of the chairman of the department with a vice president of the USSR Academy of Sciences, and in the establishment of administrations instead of departments.

As a result this is not a department, but its fragments, which it is necessary to put together again. My main task is: somehow to bond them together. I am now trying to persuade the directors of institutes to get rid of the antagonism and to restore relations. In the end the fate of the Far Eastern Department of the USSR Academy of Sciences depends on them and agreement among them. The Far East should be not a forge of academic titles or a trampoline for administrators from science, but a place where the knowledge about the unique nature of this region of the planet: The ocean, the depths of the earth, biological resources, is increased. The future of mankind is here, and we must not fail to keep up with it separately.

Academicians Protest Action on Forming RSFSR Academy of Sciences

907A0303B Moscow PRAVDA in Russian
30 Jun 90 2d edition p 2

[Letter to PRAVDA under the rubric "A Letter to the Issue": "An Unacceptable Principle"]

[Text] The report on the preparation of the constituent congress of the RSFSR Academy of Sciences, which appeared on 24 June 1990 in the newspaper LENIN-GRADSKAYA PRAVDA, as well as a number of other oblast newspapers of the Russian Federation, should have given Leningrad scientists satisfaction. Undoubtedly, the establishment of the Russian Academy of Sciences is an important and urgent task. On 24 January 1990 the Presidium of the RSFSR Supreme Soviet had already promulgated the corresponding Ukase, and the organizing committee formed by it is preparing its suggestions. Different opinions about the role and place

of the RSFSR Academy of Sciences exist among scientists. As recent experience in the solution of similar problems shows, the main thing is not to do harm by hasty and ill-considered actions.

The incorrect understanding of the democratic process as the freedom to be called whatever one wishes and the fever of constitution cannot yield a positive result. We see the guarantee of success in the extensive and creative discussion of these problems by scientists of academic, VUZ [higher educational institution], and sectorial science.

The Presidium of the Leningrad Scientific Center of the USSR Academy of Sciences and the coordinating council of the Leningrad Union of Scientists at their joint meeting came to the conclusion that serious discussion in the scientific community should precede the establishment of the Russian Academy of Sciences. Therefore, the haste, with which the Executive Committee of the Leningrad Oblast Soviet of People's Deputies registered the city public organization—the Leningrad Department of the RSFSR Academy of Sciences, which for the present still does not exist—evokes surprise. With the same haste this organization has taken upon itself the initiative of holding in Leningrad the constituent congress of the RSFSR Academy of Sciences. The scientific community even does not know, of what level are the scientists who have united in this organization and have become members of its presidium.

The interconnection of the fates of Russia and the Russian Academy of Sciences is obvious, and here the principle—whoever is first to establish himself, will also appropriate the title of the Russian academy—is unacceptable.

[Signed] Academician D.S. Likhachev, USSR People's Deputy; Academician B.B. Piotrovskiy; Academician L.D. Faddeyev; Corresponding Member of the USSR Academy of Sciences B.V. Gidasov, USSR People's Deputy; Corresponding Member of the USSR Academy of Sciences A.A. Fursenko; Doctor of Juridical Sciences A.A. Sobchak, professor of Leningrad State University and USSR People's Deputy; Candidate of Biological Sciences L.Ya. Borkin, cochairman of the Leningrad Union of Scientists; Doctor of Physical Mathematical Sciences A.M. Yelyashevich, cochairman of the Union of Scientists

Structural Changes in AS Physics Institute Discussed

907A0304A Moscow POISK in Russian No 23, (58),
8-14 Jun 90 p 1

[Article by POISK special correspondent Aleksandra Mukhina under the rubric "Details for POISK": "A House Warming Under an Old Roof"; first paragraph is POISK introduction]

[Text] The Physics Institute no longer exists. Whoever doubts my words and decides to make a trip to Leninskiy

Prospekt, will find the historic building safe and sound. What has happened? The "classic" Physics Institute of the USSR Academy of Sciences [AS], the institute, at which a number of most important discoveries in modern physics were made, has disappeared. The awarding of Nobel Prizes to six of the physicists of the Physics Institute of the USSR Academy of Sciences was recognition of their services. But a federation of six departments, each of which is actually an independent institute, has appeared in place of the old Physics Institute of the USSR Academy of Sciences. Decentralization—that is what has happened with one of the oldest scientific centers of the Academy of Sciences.

The necessity of forming more flexible organizational structures was discussed at the Academy of Sciences over the course of several years. The decree of the General Assembly of the USSR Academy of Sciences of 20 October 1988 is well known among the scientific community: The assembly changed the departments of the Academy to consider the question of "the expediency of the decentralization of the management of large institutes for the giving of the maximum independence (including financial) to research collectives." Here the administration of the institute should have been concerned about the development of an infrastructure capable of ensuring the most efficient work of collectives.

If you take a look at the formed scientific subdivisions of the Physics Institute of the USSR Academy of Sciences, it will turn out that they were ready long ago for such a reform. For the research of the institute encompasses all the basic directions of physics—theoretical physics, quantum radio physics, solid-state and high-energy physics, the study of cosmic rays, optics, and radio astronomy. The principle of one-man management in such a "polyphysical" institute as the Physics Institute of the USSR Academy of Sciences could only hamper the development of individual scientific directions. Therefore, the decision was made to transfer the basic management rights to the departments.

Incidentally, a detail of no small importance: Academician L. Keldysh, general director of the Physics Institute of the USSR Academy of Sciences, received the support of the scientific collective of the institute in the election in many respects because in his program colleagues saw the consistent aspiration for the transformation of the Physics Institute of the USSR Academy of Sciences into a federation.

Today the Physics Institute has a charter, precisely in conformity with which it is a federation of scientific subdivisions which have common auxiliary subdivisions. True, the new collectives never received the rights of a legal person. This limiter of independence seems quite artificial. There is no need to fear that such a thing might lead to the "disintegration" of the institute.

"There are a number of factors which prevent 'centrifugal' trends. These are the inevitable weakening (in case of

'decay') of the scientific, technical, and production base and the loss of the possibility of the exchange of ideas, approaches, and methods among highly skilled specialists in various fields of physics, whom the Physics Institute of the USSR Academy of Sciences unites," Vladimir Isakov, scientific secretary of the institute, believes.

Unfortunately, only the USSR Council of Ministers has the right to settle the question of complete legal "freedom." While in fact the economic independence of the department-institutes is specified by a "gentlemen's agreement" between the general director and the directors of the departments.

Already now the departments themselves are planning scientific research, are spending the assets, which are deposited in a separate personal account at the institute accounting office, and are settling personnel questions. The fact that, in conformity with tradition, at the physics institute a researcher enjoys far greater freedom of creativity than at many scientific organizations of the country, is probably of great importance. No theme here will be "closed," if the possible results in the future will provide something that is of scientific importance.

Independently disposing of budget allocations and money which is received from clients, the departments themselves draw up estimates of the spending on the conducting of scientific research, deducting some portion of the earned sum for the maintenance of the auxiliary subdivisions and the operating expenses of the Physics Institute of the USSR Academy of Sciences. But it is impossible to say that the departments "fleece": The decisions are made collectively, by the council of directors. Incidentally, if you have succeeded in saving budget assets and in earning a profit, you can organize your own fund for scientific, technical, and social development and, what is of no small importance, a material incentive fund....

In recent times at the Physics Institute they have been worried by the problem of the changeover of science to full cost accounting. Basic science, in contrast to applied research, cannot be developed on the basis of cost accounting. However, it is also necessary to note another thing—the division of science into basic and applied science is very arbitrary. For example, in the department of optics of the Physics Institute of the USSR Academy of Sciences the boundaries between "the basic" and "the applied" are quite blurred.

An important peculiarity of the research being conducted here is the fact that it includes not only the development of physical principles and methods, but also the devising of highly efficient equipment. For example, a unique X-ray telescope—the TEREK—which was the result of the decade-long development of a new

technology of multilayer X-ray mirrors, new radiation detectors, filters, and other elements, was installed on the Fobos-1 interplanetary automatic station. As is evident, if basic research takes place at a high technical level, many results are applicable in practice....

The "classic" Physics Institute of the USSR Academy of Sciences no longer exists. There is a federation of department-institutes, whose work for the present is proceeding no less successfully than that of the former Physics Institute. The future will show what will come of this. One thing is indisputable: Decentralization has far more advantages than drawbacks.

USSR Academy of Medical Sciences Elects Pokrovskiy President

907A0281A Moscow TRUD in Russian 7 Jun 90 p 1

[Article by a TASS correspondent (Moscow): "The Election of the President of the USSR Academy of Medical Sciences"]

[Text] The General Assembly of the USSR Academy of Medical Sciences, which is now being held in Moscow, has completed the discussion of the report on the work of the presidium during 1985-1989 and on 6 June proceeded to the election of the president of the USSR Academy of Medical Sciences.

For the first time in the history of the academy it was conducted on an alternative basis. The candidacies of Academicians of the USSR Academy of Medical Sciences V.I. Pokrovskiy, Ye.I. Chazov, and A.G. Chuchalin were included on the ballot for the secret vote.

As a result V.I. Pokrovskiy, who won the largest number of votes—178 for and 79 against—was reelected president. There were 62 votes cast for and 195 votes cast against Ye.I. Chazov, there were 15 votes cast for and 242 votes cast against A.G. Chuchalin.

On 7 June the assembly will continue its work. Its participants now have to elect the vice presidents, the chief scientific secretary, and the members of the presidium of the USSR Academy of Medical Sciences.

USSR Engineering-Technical Academy Holds Founding Congress

907A0281B Moscow IZVESTIYA in Russian 13 Jun 90 Morning edition p 3

[Article by I. Zhagel: "An Academy Is Founded"]

[Text] The founding congress of the USSR Engineering-Technical Academy was held in Moscow on 11 June. The representatives of more than 300 enterprises, design bureaus, and institutes, who were present here, actually spoke unanimously in favor of the establishment of such

an organization. A working group, which was commissioned to prepare the charter, the program of actions of the academy, as well as its first working meeting, was also elected.

The idea of establishing the Engineering-Technical Academy in general is not new. It has been advanced for about 15 years now.

Now, in connection with the change of the procedure of registering public organizations, no obstacles to the

appearance of the new academy actually remain. Only a question remains: Will it be able to become necessary for our national economy?

The fact that similar academies exist in the majority of economically developed countries, speaks in its favor. We also have the need to destroy the departmental barriers in the implementation of scientific discoveries and when developing new technologies and equipment. Many of those who spoke at the founding congress also saw in this the basic task of the academy.

**Awarding of Advanced Degrees Without
Dissertation Arouses Controversy**

907A0290A Moscow OGONEK in Russian No 21,
May 90 p 25

[Article by Vanda Beletskaya under the rubric "Polemics": "Doctors of Sciences...According to the List"]

[Text] That is what the interview with Academician V.S. Avduyevskiy (OGONEK, No 15), in which the work of the Higher Certification Commission (VAK) was criticized, was called. In particular, it was a question of the decree, which disturbed the scientist and permits a special council of the Higher Certification Commission to confer academic degrees on specialists, who are working on the Energiya-Buran Program, without the defense of dissertations.

The statement of Academician Avduyevskiy disturbed the scientific community. OGONEK received many letters, scientists and designers called the editorial office. A discussion of the OGONEK material took place in the Committee for Social Aspects of Scientific and Engineering Activity attached to the USSR Union of Scientific and Engineering Societies.

To the Editorial Board of the Journal OGONEK

We consider it our civic duty to support the publication of the journal OGONEK, No 15 (199), "Doctors of Sciences...According to the List."

The decree, which was adopted by the USSR Council of Ministers at the end of last year, on the establishment of a specialized council, which is given the right to award academic degrees without the defense of dissertations, without the submission of scientific reports, without the passing of candidate examinations, and without consideration in the expert councils of the Higher Certification Commission, will hardly promote the development of science in our country. In our deep conviction, the Statute on the Procedure of the Awarding of Academic Degrees and the Conferring of Academic Titles, which was approved by the USSR Council of Ministers, also does not conform to the spirit of the times and to the changes that have been caused by the perestroika processes in our society.

The very fact of the approval of the draft of the Statute without preliminary discussion and consultation in the Committee for Science, Public Education, Culture, and Training of the USSR Supreme Soviet causes utter bewilderment. We believe: It is necessary to eliminate the connection of the Higher Certification Commission with the USSR Council of Ministers and to remove it from subordination to the administrative command system.

We express the hope that the general aspiration to improve the state of affairs in science will yield real results with the activity participation of the community at large.

[Signed] Academician A.L. Yanshin

Academician B.V. Raushenbakh

Academician N.N. Moiseyev

Academician V.P. Mishin

Academician G.A. Arbatov, USSR People's Deputy

Corresponding Member of the USSR Academy of Sciences S.S. Averintsev, USSR People's Deputy

Doctor of Historical Sciences A.A. Sobchak, USSR People's Deputy

Candidate of Technical Sciences I.I. Zaslavskiy, USSR People's Deputy

Doctor of Economic Sciences G.Kh. Popov, USSR People's Deputy

Candidate of Historical Sciences Ye.A. Gayep, USSR People's Deputy

Doctor of Medical Sciences Yu.N. Shcherbak, USSR People's Deputy

Candidate of Historical Sciences S.B. Stankevich, USSR People's Deputy

USSR People's Deputy V.A. Logunov

Fragments of the Discussion of the Material "Doctors of Science...According to the List" in the Committee for Social Aspects of Scientific and Engineering Activity Attached to the USSR Union of Scientific and Engineering Societies on 18 April 1990

USSR People's Deputy A.N. Yezhev, head of a department of the Central Scientific Research Institute of Economics and Management of Construction of the USSR State Construction Committee:

I believe that Academician Avduyevskiy justly objects on the pages of OGONEK to the disgraceful decree on the awarding of academic titles without the defense of dissertations to certain "elite."

The activity of the Higher Certification Commission for many years now has evoked bewilderment. With the arrival of the new chairman of the Higher Certification Commission, Academician Ye.I. Shemyakin, some changes for the better appeared: The staff, including management personnel, was reduced somewhat, individual executives, who had compromised themselves, had to change their place of work, the chairman of the Higher Certification Commission began to receive seekers of degrees and to look into specific cases and with respect to several "lost" causes even achieved a just solution. Finally, a new version of the Statute on the Procedure of the Awarding of Academic Degrees and the Conferring of Academic Titles was prepared. However, this Statute was disappointing. It is based on the premise of the inviolability and infallibility of the very system of certification. It was adopted in camera, secretly from the

scientific community, without discussion in the press, and contrary to the opinion of specialists of the USSR Supreme Soviet.

Today 360 people, who are working on the Energiya-Buran Program, have already gotten in line for academic degrees without dissertations. We should activate all democratic forces against such violations.

Doctor of Technical Sciences A.D. Frolov, head of a chair of the Moscow State Historical Archive Institute:

A completely absurd system of the awarding of academic degrees exists in our country. I believe that it is necessary to abandon centralization. Scientific institutions should issue the diploma, while "the table of ranks" of such scientific institutes is well known throughout the world.

Doctor of Technical Sciences Ye.A. Grebenikov, head of a laboratory of the Institute of Problems of Cybernetics of the USSR Academy of Sciences:

OGONEK correctly stated: In no country of the world is it possible to obtain an academic degree without the submission of scientific works. A kind of upside-down system results.

As to the humanities, in western countries there are no academic degrees at all for them. It is possible to be a professor, but it is impossible to defend one's dissertation and become a doctor of sciences in any of the humanities disciplines.

Doctor of Technical Sciences Professor A.V. Ilichev, chief of the scientific engineering center of the Scientific Production Association of Machine Building, member of an expert council of the USSR Higher Certification Commission:

I completely agree with the statement of OGONEK. The very combination of words "awarding without a defense" is a synonym of the term "conferring" and is at variance with the essence of the concept "awarding" as the result of the demonstration and defense of the personal positions, which have been presented by the author in his scientific work.

I am expressing here not only my personal opinion, but also the opinion of a group of scientists—the expert group for aircraft and space rocket technology. They are deeply worried by the possibility of awarding academic degrees without the holding of a public defense and by the establishment of preferential conditions for people, who are not capable of defending (or do not wish to defend) the results of their personal work in the form of a scientific work, which could be used extensively in the future. The possibility of the administrative appropriation of the results of a collective work also gives rise to apprehensions.

This cannot benefit either the development of new highly efficient equipment or the training of scientific personnel.

From an Interview of an OGONEK Correspondent With Academician Ye.I. Shemyakin, Chairman of the Higher Certification Commission

Ye. I. Shemyakin: Since OGONEK has taken an interest in our problems, I would like to begin with the fact that the Higher Certification Commission in its present composition is in many respects a product of perestroika. I became chairman of the Higher Certification Commission only in the fall of 1987. Of course, the work of the commission is also today far from the ideal, it is still necessary here to improve or else simply to change much, but it is hardly advisable to reject nearly everything completely.

The main edge of the criticism is aimed at the fact that the new Statute on the Procedure of the Awarding of Academic Degrees, which was approved by the Council of Ministers on 30 December 1989, was adopted without discussion. This is not so. The USSR Academy of Sciences and the Higher Certification Commission began the work three years ago. Then the Council of Ministers made the decision to view the draft of the Statute with approval and to publish it, which was done in *BYULLETEN VYSSHEY ATTESTATIONNOY KOMISSII* and *EKONOMICHESKAYA GAZETA* in March of last year.

The State Committee for Science and Technology set up a commission for the consideration of proposals under the supervision of Academician O.M. Belotserkovskiy. Hundreds of letters with remarks and additions, which were taken into account when modifying the document, were received. Discussions of the draft were held in Moscow, Leningrad, Siberia, the Far East.... When the work on the document was completed, Academician Belotserkovskiy reported this to Academician Yu.A. Ryzhov.

It was taken painfully that in accordance with the new statute the role of specialized councils and scientists, whose activity the Higher Certification Commission previously suppressed to a certain extent, has been enhanced. It seems to me that the slogan "All power to the Soviets [Councils]" is also correct for our case, it is important that specialists of a high scientific level would be included on them.

This also pertains to the expert councils, of which there are 37, in all fields of science and technology, within the Higher Certification Commission. Specialties, which previously did not exist, have appeared.

The assertion that expert councils are not needed, is incorrect. The monitoring of the defense, particularly of doctoral dissertations, is necessary, otherwise the scientific level of works might decline, and science will not gain from this.

The basic criticism of Academician Avduyevskiy is aimed against the decree of the Council of Ministers, which, unfortunately, I cannot discuss with you, I do not have the right.... For the present boundaries exist

between states in the world, in our country there are certain rules, it is my professional duty to observe them. If they were repealed, it would be a different matter.

But I will object to the assertion that the Higher Certification Commission is not needed at all and nowhere in the world is there an analogous system. The basis of the activity of the Higher Certification Commission is the organization of the scientific potential of the country. In the United States, for example, certification takes place at universities under the supervision of the Department of Education, in the FRG it takes place under the supervision of the West German Conference of Rectors. They perform functions that are analogous to the functions of the Higher Certification Commission, so that

such work is performed by governmental institutions or under the control of the government.

And a last thing. Under all circumstance it should remain inviolable that the dissertation would be an individually written work which testifies to the personal contribution of the author to science. And the public defense and secret voting should remain just as inviolable. The violation of even one of these principles is disastrous for science and will lead to nihilism and anarchy. It is possible to destroy everything. To wreck means not to build. But with what will we then be left? If namely this worries my opponents, I completely agree with them.

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Inventors Comment on Latest Draft of New Patent Law

907A0309A Moscow IZOBRETATEL I
RATSIONALIZATOR in Russian No 6,
Jun 90 pp 18-19

[Article under the rubric "The Draft of the Law": "'On Invention in the USSR.' At the Discussion of Those Whom It Directly Concerns"]

[Text] N. Morozova, V. Lyushnin, scientific associates of the Khabarovsk Aviation Institute, inventors

In conformity with the draft of the Law the registration of the patent will be dragged out for 1.5 - 2 years. It is necessary to shorten this time substantially, which is entirely possible with the use of the computer processing of information.

Further. The system of patents, which is being introduced, will make it possible to use them without the knowledge of the author. Who will see to it that a contract would be concluded without fail with the author in case of the implementation of his development? For in order to appeal to the patent court, it is necessary to know that somewhere your invention is already being introduced.

From the draft it is unclear whether developments, which have already been registered as an invention, will be voided or will be transferred to the rank of a patent.

Candidate of Technical Sciences V. Terekhov, senior scientific associate of the Mekhanobr Interbranch Scientific Technical Complex

Section II, Article 25, Point 2 again restricts the free appearance of an inventor on the world market. Our many years of experience suggest that the time of the obtaining of permission for the submission of an application in foreign countries, which is indicated in Point 1, can be dragged out for years.

Section IV, Article 23. There should be indicated if only the approximate amounts of the duties, otherwise the Council of Ministers will change them, issuing instructions that reduce your correct laws to naught.

Article 30. It is necessary to explain Point 3. What does the concept of the forced purchase of an invention, which is of "particularly great importance for the state," mean? Who determines this importance and the amount of the payment to the patentee of monetary compensation? In Article 45 the vague "great national economic importance" of the invention" appeared again. Who establishes it and who grants additional living space to the author for this?

Point 1 of Article 44. I propose to record it in the following wording: "A leading role in the operations on the preparation of an invention for use in production is granted to the author."

Leningrad

Maris Kyuzans, chief of the patent division of the VEF Republic Production Association

I endorse the new draft of the Law. I consider it necessary to note that practically all the suggestions on the change of the previous draft of the Law, which were sent to Moscow by inventors and patent experts of the Riga Order of Lenin State Electrical Equipment Plant imeni V.I. Lenin, were taken into account. It is necessary to give force to the present draft not from the beginning of the new year, as is usually done in our country, but immediately after its approval, inasmuch as the mechanisms of the payment of the author's rewards are clearly specified in the Law, that is, real economic stimuli for the development of invention have been devised.

A. Plaks, manager of a patent group of the Riga Red Banner Institute of Civil Aviation Engineers

Section II, Article 4, Point 1, the phrase: "An invention is new, if its essence (?) is unknown from the level of technology," sounds vague. Ibidem: "the invention level" is a definition which allows subjective interpretation.

Ibidem, Point 3: "Algorithms and programs for computers are not recognized as inventions." I consider this to be incorrect.

Riga

Yu. Goncharenko, chief engineer of the construction and installation laboratory of the Novosibirsk Elektron PMSO, author of 60 inventions

At first glance in the draft of the Law whoever made the invention—a specific person or a group of coauthors—is proclaimed the patentee. I believe that in practice in the majority of cases enterprises or the USSR State Fund of Inventions will be the patentees. The point is that the duty being introduced will strike the hands of many inventors, especially as its amount is not stipulated. Therefore, after the introduction of the duty the author of an invention will begin to turn over the rights to an enterprise, while those, who work at home, will begin to turn them over to the State Fund. This means that everything will remain in its former place.

Article 41, so it seems to me, is also aimed against the inventor. It is stated in it that the reward for the use of an invention during the term of effect of the patent is paid to the author in the amount of not less than 15 percent of the profit that is derived annually by the enterprise. But we know that previously enterprises also did not hurry to pay two percent. Therefore, I believe that in the Law it is necessary to indicate a specific percent, in order not to allow arbitrary interpretation and the infringement of the rights of the author.

In Articles 44, 45, 46, and 47 there is nothing new, they also existed before. There is not one specific point although there is much discussion about the benefits for inventors. The wordings should not be vague. For example, the title of Honored Inventor of the Republic

should automatically be conferred on the author of 10 inventions with a total economic impact of 500,000 rubles.

Novosibirsk

Candidate of Technical Sciences V. Minaker, the Scientific Research Institute of Chemical Machine Building, inventor

The authors of the draft, so it seems to me, tried to liken it to similar laws in other countries. And for the most part they succeeded in this. Unfortunately, it was not taken into account that we live and work under completely different conditions. For example, mechanisms of protection against monopolism, which in our society are extremely necessary, are not provided for in the law. By buying "standing" patents, our monopolies can easily block all paths for the introduction of an invention by other enterprises, but are in no hurry themselves to use what has been bought. In order to rule out such a possibility, it is necessary to prohibit enterprises to purchase inventions without the conclusion of a license agreement, in which the stages of introduction, its amounts, and the times should be indicated. The same thing also concerns applications which are submitted on behalf of an enterprise.

I believe that the USSR State Fund of Inventions is the pushing through of the old form of the protection of inventions in the new law. It should be envisaged that the duties would be small at the stage of examination and would increase at the stage of the maintenance of the license. The State Fund should also conclude a specific license agreement with the inventor.

In Section III of the Law it is necessary to take into account the division of enterprises into developers and producers of a product. In the West all this is in the hands of one firm, while in our country it is otherwise.

In Point 31 on the property liability for the violation of a patent there is fixed how the damage to the patentee is determined and what the state receives from the profit of the offender. It is clear that the state will try to depict the damage to the patentee as less than in reality, in order to put the difference in its own pocket.

Article 27, Point 1, Paragraph 2, is worded in such a way that violators can easily get round any patent with a multiple-unit formula, having eliminated or changed in it of only one point.

According to Article 36 an enterprise, which has received a state order for the production of new equipment, can purchase the rights to an invention on the basis of a mandatory license. Taking into account that in the country the majority of enterprises, especially large ones, are encompassed by the state order, this will lead to the

violation of the rights of patentees, especially small ones; for example, small enterprises.

Moscow

Candidate of Technical Sciences S. Yakovenko, the Energostal Scientific Production Association, author of 55 inventions

I believe that Article 18 of the draft of the Law on Invention is worded inexactly. Point 3 states that the time of the patent examination can be extended by the State Committee for Inventions and Discoveries. It should be specified by how much.

What status will old inventions and positive decisions have? For there are nearly 1.5 million of them. How will the payments for inventor's certificates be made?

Kharkov

V. Zhukov, chief designer of the Novosibirsk Affiliate of the Sudostroyeniye Scientific Production Association, Honored Inventor of the RSFSR

I am glad that as a whole the draft of the Law heralds the end of the disfranchised status of inventors in our country, inasmuch as the invention has been recognized as a commodity, while its author has been recognized as the owner of the commodity.

But it is clearly visible that the Draft for the present does not create an economic mechanism of the introduction of scientific and technical progress in the national economy. Moreover, unfortunately, the former departmental arbitrariness is preserved.

In Points 1 and 2 of Article 35—"The State Stimulation of Inventions"—the cunning move that for five years the income from an invention is not subject to taxation, is made. This is as if a benefit. But here there is a contradiction to the Law on the State Enterprise, Association. There it is stipulated that the cost accounting income of a collective is the source of the development of production, the social development of the collective, and the remuneration of labor. It is at the disposal of the enterprise, is used independently, and is not liable to confiscation.

Novosibirsk

S. Lurye, lead designer

According to Article 35 the author's reward depends on the part of the profit (revenue), for which the invention accounts. If one invention and no other innovations ("know-hows," efficiency proposals, and so on) has been used in a commodity, the problem would be solved. But in the overwhelming majority of cases tens and hundreds of inventions and tens of "know-hows" and efficiency proposals, which are also paid for from the same source, are embodied in a commodity. How is it to be divided?

Reutovo, Moscow Oblast

Professor Yu. Levin, director of the All-Union Center of Practical Lymphangiology, chairman of the Central Section of Health Care and the Microbiological Industry of the Central Council of the All-Union Society of Inventors and Efficiency Experts

As a whole the draft of the Law is a progressive step. Two articles seemed unclear and vague to me. In Section III, Article 37, Point 2 we read: "The expenditures of an enterprise on the development and use of inventions in its own production, the effective impact from which does not take the form of a profit or revenue (labor safety regulations and labor safety techniques, nature conservation measures, the reduction of the sick rate, and so forth), as well as on the payment of rewards to the authors of inventions and to the people, who contributed to the development and use of such inventions, are attributed to the production cost." It has been obvious to everyone for a long time that the reduction of the sick rate of the able-bodied population and the decrease of the time of the stay in a hospital bed yield an enormous economic impact. The collective supervised by S. Fedorov was able to calculate exactly the profit which each new operation yields. It is also unclear, to the cost of what production are the expenditures and the author's reward of medical personnel attributed?

The vagueness of such a provision was automatically transferred to Article 41 (Point 4) of the same section: "The reward for the use of an invention, the effective impact from which does not take the form of a profit or revenue, is paid by the enterprise in the amount of not less than 1.5 percent of the share of the cost of the product (work and services), for which the given invention accounts." By what enterprise? It is fine if the invention was made in the medical and sanitation section of, for example, the Moscow Motor Vehicle Works imeni I.A. Likhachev. It would also pay. But what if the inventor works at a clinic, an ordinary hospital, or a rural outpatient clinic? The questions are far from idle, especially taking into account the fact that today in the number of received author's certificates medical personnel hold one of the first places in the country.

V. Nedzvetskiy, physician, inventor

I carefully sought in the draft the provision that interests me most of all—What is to be done with author's certificates that have been received before the passage of the Law? The right to their use belongs to the state, that is, specifically to no one. I have bitter experience—they stole from me the ideas of inventions, took them directly from my inventor's certificates, used them, passing them off as their own, fired me from my job, and so on. The rewards, of course, are zero, the decisions of the courts remained on paper.... In general, it is a picture that is familiar to thousands of inventors. I want to understand

clearly from the Law: Is it possible to "exchange" previously received author's certificates for a patent and to acquire all the rights of the patentee, which are envisaged by the Law?

Odessa

Doctor of Medical Sciences S. Dzasakhov, head of a chair of the Chita Medical Institute, inventor

The phrases: "The list of actions...is established by the USSR Council of Ministers," "...on the basis of the Charter which is approved by the Council of Ministers..." and so on are constantly encountered throughout the text of the draft. It is obviously clear that after the passage of the Law, which we have awaited many years, it will become cluttered with an incredible number of sublegal acts, instructions, and so on. Sad examples, when these acts and instructions practically destroyed the Law itself, already exist. Why repeat the mistakes?

Article 50.5 of Section V causes bewilderment: "The organization and procedure of the activity of the USSR Patent Court are specified by the law on the USSR Patent Court." But where is the draft of this Law? How is it possible to examine separately two most important documents, which for a long time will govern invention activity in the country?

Chita

Candidate of Technical Sciences P. Khlopenkov

Inventions, which for long years are classified and are dead weight, are doing great harm to the development of progress: we ourselves will not eat and we will not let others eat. World practice has shown that related, similar inventions will appear in other countries with gap of two to five years. Therefore, in the new law it is necessary to stipulate that classified inventions having the stamp "For Official Use," which are not used within two years, should be declassified and published in the open press, becoming available to a wide range of clients.

Article 31 on property liability for the violation of a patent, that is, if you call a spade a spade, for theft, is absolutely impotent. A thief actually does not bear any liability: if they seized his hand, he should at the demand of the patentee give back what was stolen. And is that all? Moreover, it is difficult to assume that the private owner of a patent will actually be able to expose the fact of the theft of his invention by an enterprise in remote corners of the country.

Moscow

Candidate of Technical Sciences Yu. Yermakov, author more than 300 inventions

I regard as a step backward of the draft of the new law, which as a whole is entirely satisfactory and democratic, the absence in it of the concept of "deferred examination": it was present in the previous version. In the majority of developed countries after a preliminary examination the information in the application is published, and legal protection is granted to it for a period of up to four years, during which the author can also demand a patent examination. In the new draft the

patent examination follows immediately after the preliminary examination, without deferment, which does not make it possible to separate important inventions from trivial things (IZOBRETATEL I RATSIONALIZATOR, No 3, 1990, p 9, "Patent Incompetence").

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VOIR Official Endorses Latest Draft of New Patent Law

907A0297A Moscow *RABOCHAYA TRIBUNA*
in Russian 13 Jun 90 p 3

[Interview with Ye. I. Tyurin, chairman of the Central Council of the All-Union Society of Inventors and Efficiency Experts, by *RABOCHAYA TRIBUNA* correspondent D. Alekseyev, under the rubric "A Topical Interview": "Why Have They Hidden Inventions?"; date and place not given; first paragraph is *RABOCHAYA TRIBUNA* introduction]

[Text] A plenum of the Central Council of the All-Union Society of Inventors and Efficiency Experts was held in Moscow. What problems worry inventors and efficiency experts? Ye. I. Tyurin, chairman of the Central Council of the All-Union Society of Inventors and Efficiency Experts, tells our correspondent about this.

Ye. I. Tyurin: The indicators of invention and efficiency work in the country have decreased. During the past two years alone the number of authors, who submitted efficiency proposals, decreased by nearly a half, one-fourth fewer inventions reached production. And this decline is continuing in defiance of the appeals of the government to increase the role of science and technology. However, at what is one to be surprised?

Under the conditions of the acute deficit the economy is not receptive to innovations. Enterprises can exist comfortably by producing an old or poor quality product—people will buy it anyhow. There is no competition—there is no one, to whom to offer better goods, while, what is the main thing, it is not necessary to try to attain them.

RABOCHAYA TRIBUNA: It is a familiar and sad picture. People themselves no longer desire to sell inventions and efficiency proposals. Why?

Ye. I. Tyurin: They are waiting for the opportunity to sell ideas at a little higher price. And here you will not deny that they have common sense. Now inventors are the authors of their developments, but not their owners. And the state metes out for each innovation not more than 20,000 rubles. But there are inventions that yield profits in the millions. The authors dream of obtaining a patent for them and of increasing their income by many fold.

But this right is envisaged precisely in the draft of the law "On Invention Activity in the USSR." Talented innovators have shelved their developments—they are waiting for better times, when the law has been passed.

RABOCHAYA TRIBUNA: Thus, there is a direct advantage for the state to do this a little more quickly. But the discussion of the law has been going on for more than a year. During this time "hidden" inventions often "surfaced" in foreign countries. They are gaining, while we are losing priority, foreign currency, prestige....

Ye. I. Tyurin: Do not delude yourself, the losses could have been far greater, if the poor draft were to have become a law. Why multiply the number of sad consequences of hasty decisions?

We do not want the law "On Invention Activity in the USSR" to be stillborn. It should, at last, ensure the inventor the social and legal protection, combine intelligently the interests of the author, the enterprise, and the state, and provide a stimulus for the intensive development of invention in the country. The dispute is over how to achieve all this.

RABOCHAYA TRIBUNA: The most farsighted managers are again relying on scientific and technical progress—they sense the advantage....

Ye. I. Tyurin: Here is a typical example. Previously we advertised developments for free at the Exhibition of USSR National Economic Achievements. What is more, we ourselves paid for the leasing of premises. But this advertisement was only a burden to enterprises—they even gave their own developments reluctantly. We simply did not have enough exhibits.... But now very many wish to exhibit their achievements at the Exhibition of USSR National Economic Achievements. But we now collect from an enterprises 800 rubles for every item that it wishes to advertise. Since they are paying, hence, has something changed? Hence, have the rudiments of competition appeared?

RABOCHAYA TRIBUNA: Do the enterprises, perhaps, want to get rid of a stale commodity? For good inventions, as we found out, have been shelved....

Ye. I. Tyurin: Believe me, the commodity is not stale. And still, in order to bring it up to a new qualitative level, it is necessary to hurry up with the law. I believe that it and the market are capable of giving rise to the mechanism which will spur on scientific and technical progress. With allowance made for the received remarks it is already possible to pass the law "On Invention Activity in the USSR." Delay is ruinous for our economy.

On the other hand, we should ourselves also reorganize our work. On the instructions of the plenum of the Central Council a concept of the functions and structure of the All-Union Society of Inventors and Efficiency Experts under the new sociopolitical and economic conditions has already been developed.

USSR, Bulgaria Sign 5-Year S&T Cooperation Agreement*907A0292A Moscow POISK in Russian No 22 (57), 1-7 Jun 90 p 2*

[Interview with Vice President and Chief Scientific Secretary of the Bulgarian Academy of Sciences, Corresponding Member Ivan Iliev, by POISK correspondent Yuliya Bogatikova: "First a Law"; date and place not given; passages in boldface as published; first two paragraphs are POISK introduction]

[Text] In Moscow talks were held between the USSR Academy of Sciences and the Bulgarian Academy of Sciences and a protocol on new scientific cooperation for the period from 1991 to 1995 was signed. The new plan is distinguished from previous ones by the fact that for the first time the scientific contacts are concentrated on seven comprehensive programs and 13 projects. Moreover, now not the head institutes as a whole, but specific leading scientists of our countries will be responsible for joint research.

Our correspondent addressed to Vice President and Chief Scientific Secretary of the Bulgarian Academy of Sciences, Corresponding Member Ivan Iliev the request to comment on the changes.

POISK: With what, in your opinion, are such substantial changes in the cooperation between our countries connected?

I. Iliev: Perestroika, which is taking place in our countries, has also not passed over the Academies of Sciences and our interrelations.

POISK: And what specific changes have occurred at the Bulgarian Academy of Sciences?

I. Iliev: As at the USSR Academy of Sciences, in Bulgaria the first election of directors of institutes on an alternative basis was held. The system of financing scientific research has also been changed. Only five to 10 percent of the assets for the implementation of the most necessary developments are released to institutes. They obtain the remaining money in accordance with projects in case of the conclusion of a contract with the presidium of the Academy of Sciences. We understand, of course, that this system is far from perfect, but hope by means of it gradually to break the habit of throwing money to the wind—of investing it in absolutely unpromising projects.

POISK: What awaits the Academy of Sciences later on?

I. Iliev: Now we are working on the draft of a law on the Academy of Sciences, which will be passed by the new National Assembly. Its election takes place in June of this year. In the new law the legal interrelations of the academy and state organs are specified, questions of the development of the Academy of Sciences as an integrated scientific institution are examined. The Academy of Sciences now will be subordinate directly to the National Assembly and through it will receive assets

from the state budget for basic research. The new charter, while will specify the principles of the subsequent activity of the Bulgarian Academy of Sciences, will also be adopted on the basis of this law, as always, by a decision of the general assembly of the Bulgarian Academy of Sciences.

Ukraine Forms Association To Promote Trade With Asia-Pacific*907A0292B Kiev PRAVDA UKRAINY in Russian 24 May 90 p 3*

[Article (UKRINFORM): "ASSO-UNITI: The Beginning of a Biography"]

[Text] The Ukrainian Association of Producers of Advanced Technologies, Science-Intensive Products, Goods, and Services for the Market of Countries of the Asian-Pacific Region (ASSO-UNITI) has been established in our republic. It is called upon to promote the establishment and expansion of ties between institutions, enterprises, firms, and organizations of the Ukrainian SSR and these states. Priority is being given to the assimilation of new forms and directions of scientific, technical, and economic cooperation, to the development of scientific research cooperation, and to the establishment of joint ventures.

Initially the association was conceived of as a voluntary public organization, which was oriented toward the establishment of contacts exclusively with Japan. Incidentally, this also found reflection in its name. However, the analysis of market conditions and the great interest, which is being displayed in business circles of the countries of the Asian-Pacific region toward the Ukraine, suggested that the boundaries of the activity of ASSO-UNITI be extended.

The Institute of Cybernetics imeni V.M. Glushkov of the Ukrainian SSR Academy of Sciences, Kiev State University imeni T.G. Shevchenko, the Institute of Electric Welding imeni Ye.O. Paton of the Ukrainian SSR Academy of Sciences, the Ukrainian Bank of the USSR Promstroybank, the Yuzhmash Production Association, the Ukrainian Department of the All-Union Society of Sinologists, and other collectives were the founders of the association.

Academician of the Ukrainian SSR Academy of Sciences A.A. Bakayev was elected president of the new association.

Computer Forum Chafes at COCOM Restrictions*907A0288A Moscow IZVESTIYA in Russian 18 Jun 90 p 1*

[Article by S. Leskov: "Cow Barns or Computers. Notes From the 1st International Computer Forum, Which Was Held in Moscow"]

[Text] In the midst of the comfort of the International Trade Center the most prominent manufacturers and developers of superadvanced information technologies in the world held discussions on the prospects of enterprise and appearance on the Soviet market. Across the road in a small store, I dropped in there myself, sweaty people thronged—they gave everyone 10 eggs each.

"Do you not think that it is a most absolute harebrained idea to talk about computerization in a half-starved and unclothed country?", I asked Vice President of the USSR Academy of Sciences Ye. Velikhov.

"If we do not want to ruin our intellectual potential, as we wrecked agriculture at one time," the scientist replied, "we should show the utmost concern for the development of advanced fields of science. Moreover, it is simply impossible to find our way out of the deep economic hole, in which we have found ourselves today, without the use of the latest technologies. Otherwise our lag will grow. I have been hearing for about 10 years now discussions about the fact that in our country cow barns are collapsing and computers, they say, can wait. Here we sit—both without computers and without cow barns."

It is impossible to overestimate the importance of information technologies in a modern economy. It is difficult for us to appreciate this, but it is a fact: About five years ago in developed countries this sector began to outdistance the energy complex, which had invariably been in the lead in material investments, while now it has already gone far past it. Computerization provided a significant increase of labor productivity, owing to which a change of the social structure of society occurred. In the United States and Western Europe about 60-70 percent of the workers are now employed in services. The influence of computers on the life of society is increasing, the changeover to computers of a new generation occurs every three to four years. In the immediate future there is the development of light-weight, 1.5- to 2-kilogram personal computers, which will be furnished with a built-in telephone that makes it possible to obtain at any time and at any place information from powerful memory blocks. Such computers will become companions of the life of man and will change fundamentally our entire way of life. Here the person with whom I am speaking is correct: It is necessary to pull ourselves up, we will not push each other for ever in the line for eggs....

But for the present our achievements are extremely modest. The lag with respect to practically all items is colossal. The Japanese, for example, have begun the test marketing of 16-megabit chips, while in our country there is a shortage of 256-kilobit chips. The domestic Elektronika-32 microprocessor with very average capabilities, which was promised long ago, has only just appeared. Why are we in the rearward? The orientation of science and industrial toward military goals, which went on for years, and our pathological secrecy led to seclusion and isolation from world progress. Excessive concentration and monopoly, which also by no means

stimulate the development of fruitful scientific ideas, are also of the same order. In the West computer technology was developed not only at major firms like IBM—the giants by their nature are conservative. Frequently, as happened with personal computers, comparatively small enterprises, which are willing to take a risk, head a technological breakthrough.

In the early 1980's the USSR came to its senses and set out in pursuit of the leaders in the area of information science. However, as Ye. Velikhov, academician secretary of the Information Science, Computer Technology, and Automation Department of the USSR Academy of Sciences, which was established during that period, acknowledges today, Soviet scientists did not succeed in convincing industry of the progressive principles of the development of computer technology. As a result the outlined tasks on the development by the end of the 1980's of a personal computer industry and on the saturation of the market with domestic information technology were not fulfilled. A market emerged—a shadow market, but this is a separate theme. The only achievement, perhaps, is the shift in social consciousness in the direction of the necessity of reequipping industry with advanced information technologies. But the capacities of the production of more expensive computers and a higher class of computers than personal computers for the present are small. In 1989 about 500 machines and workstations were made, this year it is possible to count on 1,000. The possibilities, apparently, are limited to several thousand workstations a year. On a world scale it is, I confess, very few.

Does it turn out that the situation is a dead end? In the foreseeable future, however sad, we ourselves will not supply ourselves. But in the production of information technologies no country in the world relies exclusively on its own forces. Even such giants as the United States and Japan buy the element base in Singapore and Taiwan. Unfortunately, to this day the COCOM [Coordinating Committee on Export Controls] export restrictions are hindering USSR cooperation with foreign partners. In recent times hopes for their repeal have appeared. The first breach in the COCOM bastions: The installation of an IBM computer system, which was assembled on the basis of superadvanced processors, has started at the Moscow Chayka Garment Factory.

In any case we should offer something in exchange—otherwise what kind of cooperation is it? The main goal of the International Computer Forum also consisted precisely in the search for business contacts and points of mutually advantageous cooperation. As dealings at the thousands of stands and displays showed, first of all software, as well as algorithms and mathematical models, which were compiled by Soviet specialists, attract western partners. In short, there is one joy—clear heads have not disappeared in our country.

Thus, optimism, what is more, in the hope for the lifting of the COCOM restrictions, is glimmering. It is not ruled out that today's small stream of western computers and

information systems will expand and will pour down on our market in the long-awaited flow. One circumstance, I confess, disturbs me. If the domestic electronics industry is unable to offer to the world market its own achievements, something material, while talented people remain our only achievement, the "brain drain" to the West, which already now is vexing science, will become irreplaceable. Will the semiconductors, the experimental production of which our cosmonauts began a few days ago on the Mir orbital station, sell for their weight in

gold? But here it is better for the present to maintain skepticism: Hopes on space are like hopes on the Lord God. I would like all the same to wait for earthly achievements from our industry.

But for the present practically the entire exhibition, which was held within the framework of the International Computer Forum, was based on western technology....

Report on AzSSR Academy of Sciences Annual Meeting

907A0305A Baku BAKINSKIY RABOCHIY in Russian
23 Jun 90 p 3

[Article (AZERINFORM): "Science of the Republic: Yesterday, Today, Tomorrow. The Annual General Assembly of the Academy of Sciences of Azerbaijan"]

[Text] All the cream of Azerbaijan science gathered in the assembly hall of the Presidium of the republic Academy for the session of the annual general assembly. People of different generations: The elders, who laid the foundations of science of the republic, and those who succeeded them and, contributing to the formation and development of scientific thought, have themselves had time to become veterans by today, came to their traditional gathering and review of the scientific ranks, at which a report on the done work usually takes place and the plans for the future are outlined.

However, at the lofty assembly among the rows, which were allotted for full members and corresponding members of the Academy of Sciences, it was possible to count on one's fingers the young scientists, those who are...under the age of 50, who are invested with such imposing scientific titles.

The sadly humorous aphorism that youth is a shortcoming which passes with age, is well known. But, unfortunately, it is by no means being corrected, although from year to year a shortcoming, which our science still cannot get rid of: Too little concern for the young scientific generation is being displayed, is recorded conscientiously in the accountability documents. Last year 179 young specialists—four percent of the total number of scientific personnel—were hired at institutions of the Academy. Only nine people were sent for practical studies to leading scientific centers of the country. The ranks of academicians are slowing being replaced, although several of the veterans also left high posts, having replaced the official burdens of directors of institutes with the performance of the duties of advisers. However, the scientists, who occupied the vacancies, have already definitely crossed the bound that separates them from young scientists.

It is possible, of course, to rejoice over the fact that, as was noted in the report of the Academy, the average age of its members due to the new election decreased somewhat. It comes to 65 for academicians and 58 for corresponding members. But, you will agree, there is still something on which to "work" in the personnel sphere of academic activity.

The concern about personnel and the effectiveness of the activity of scientists is merely a portion of the problems which were discussed at the session. A panorama of the work of scientific institutions, which reflected the directions of research over a wide range—from the study of the depths of the earth to the mysteries of the brain—was presented in the opening address of Academician of the

Azerbaijan SSR Academy of Sciences E.Yu. Salayev, president of the republic Academy of Sciences, and in the report of Academician of the Azerbaijan SSR Academy of Sciences A.A. Nadirov, acting chief academician secretary. In their statements Academicians of the Azerbaijan SSR Academy of Sciences M.A. Ibragimov, I.D. Mustafayev, Z.M. Bunyatov, G.B. Abdullayev, and A.S. Sumbatzade and Corresponding Members A.M. Kurbanov, A.V. Mamedov, and I.S. Dzhaferov raised the urgent questions of the interpretation of the sociopolitical situation, which has formed in the republic and the country, the study of the history of Azerbaijan, and the creative elaboration, which has been rid of the dogmas of the past, of the problems of Azeri, the participation of economics scholars in the processes of the transition to a market economy, and the increase of the role of basic science.

This general assembly is an important and landmark one in the life of the Academy—it is a kind of anniversary and final one, it was stated at the session. In all 45 years have passed since the day of the establishment of the republic Academy of Sciences, which has become one of the prominent scientific centers of the country. Research on a wide range of social and natural sciences is being conducted at it, many results are included annually among the most important achievements of Soviet science, last year 25 were.

However, it is obvious that the specific achievements of scientists of Azerbaijan cannot bridge over the obvious blunders in the organization of science and its neglected state. As was emphasized at the 27th Congress of the Communist Party of Azerbaijan, "today it is regrettably necessary to speak about the fact that republic science as before is in a state of stagnation: There are no scientific schools and major discoveries, basic research is not being conducted. A focus on petty topics and a low theoretical and methods level predominate in the social sciences."

In today's sociopolitical situation the importance and urgency of the study of the entire set of problems of Azerbaijan studies and its humanities aspects are increasing. And here, it was stated at the session, scientists of the republic Academy of Sciences and higher educational institutions need, obviously, to go into broader scientific spheres and to try to see to it that their research and publications would receive the recognition of not only the union, but also the world scientific community. A particular concern of social scientists is the restoration of the "blank spots" of the history of the republic and the careful study of documentary archival and archeological materials, the problems of the history of the ethnics of the Azerbaijan people, and historical demography.

The intensification of publications, which are connected with the problems of Karabakh, testifies that social scientists of the republic have a significant scientific potential. The basic works on various aspects of history, economics, philosophy, and literature, which have

appeared in recent times, testify to the fact that formerly there were certain reserves in these fields, but the research for a long time remained as if unclaimed, and only in the extreme situation did it see the light....

Of course, it would be possible to continue the list of developments, which are urgent for the economy of the republic and the spiritual development of the Azerbaijan people. But today, perhaps, it is more important to focus on the problems, which have to be solved by the associates of academic and sectorial scientific institutions and higher educational institutions, and to determine the specific means and possibilities of increasing the return of research, which, undoubtedly, should be much greater. Unfortunately, little was said about this in the statements of the scientists, although they were controversial and reflected different, at times alternative positions. And how can one not recall here the evaluation of the activity of scientists, which was heard at the plenum of the Azerbaijan CP Central Committee, which was held in March of this year: "...Now is a time of bold ideas and conceptual developments, without which it is impossible to determine the prospects of the republic, the development of its national economy, and the increase of the well-being of the people. As before we do not have any of this from the Academy of Sciences and sectorial institutes."

The opinion that for the achievement of a new qualitative state of republic science it is necessary to solve a number of urgent problems, was expressed at the session. Under the new conditions of management it is necessary to organize more actively effective cooperation with leading scientific institutes of the country. There are also models of direct creative cooperation with foreign scientific centers, the contacts with Turkish firms in the area of metal science and seismology are a good example. But now it is time to think about how to increase the return from bilateral relations.

The correct idea about the need to ensure not only the self-development of science in conformity with the highest current demands, but also the great efficiency of the use of the accumulated scientific and technical potential for the sharp increase of the pace of the socioeconomic development of the republic was heard in the statements. However, appeals of this sort were also heard before, while scientists of Azerbaijan, and this is no secret, are still greatly indebted to the people.

To raise significantly higher the measuring rod of the demands on himself, and not to seek different kinds of explanations of the low return of research—this, perhaps, is the only acceptable approach today of the scientist-citizen to the accomplishment of the tasks that have been posed by society for the figures of science. However, within the agenda all the same there were little self-criticism and few constructive proposals and fruitful ideas with regard to the long-range scientific problems.

The report on the activity of the Academy of Sciences during 1989 was approved.

The assembly participants adopted the appeal to USSR President M.S. Gorbachev in connection with the situation in the Nagorno-Karabakh Autonomous Oblast and the rayons of Azerbaijan, which border on Armenia.

Secretary of the Azerbaijan CP Central Committee F.G. Muradaliyev and R.G. Agayev, chief of the Ideology Department of the Azerbaijan CP Central Committee, participated in the work of the session of the annual general assembly of the republic Academy of Sciences.

The Annual Assembly Has Completed Its Work

On 22 June the session of the annual general assembly of the Azerbaijan SSR Academy of Sciences completed its work. A number of organizational questions were discussed, the election of the vice presidents, academician secretary, and executives of the departments of the Academy was held.

As a result of the alternative election M.T. Abasov, U.K. Alekperov, Z.M. Buniyatov, and N.A. Guliyev were elected vice presidents of the Azerbaijan SSR Academy of Sciences, A.A. Nadirov was elected academician secretary of the Azerbaijan SSR Academy of Sciences.

The assembly approved the academician secretaries of the departments: the Physical, Technical, and Mathematical Sciences Department—F.G. Maksudov, the Chemical Sciences Department—T.N. Shakhtakhtinskiy, the Earth Sciences Department—A.A. Ali-zade, the History, Economics, Philosophy, and Law Department—A.M. Aslanov, and the Literature, Language, and Art Department—B.A. Nabiyeu.

Science Policy, Coordination Lacking in Kazakhstan

907A0294A Moscow PRAVDA in Russian 28 Jun 90
2d edition pp 1, 2

[Article by President of the Kazakh SSR Academy of Sciences U. Sultangazin, delegate of the 28th CPSU Congress (Alma-Ata): "The Academy at the Crossroads"; first paragraph is PRAVDA introduction]

[Text] Now, in my opinion, is the right time to recall that the necessity of forming a new scientific and technical policy was one of the stimulating motives of perestroika. More than four years have passed since that time, but appreciable changes for the better, unfortunately, are not evident. It seems that after the All-Union Applied Science Conference on the Improvement of the Management of Scientific and Technical Progress Under the Conditions of the Radical Economic Reform and the annual general assembly of the USSR Academy of Sciences a new stimulus will be given to the matter. But here is what is disturbing. At both these forums of the scientific community, in our opinion, inadequate attention was devoted, unfortunately, to the deep-rooted regional and departmental isolation of scientific and technical activity.

Delegates of the 28th CPSU Congress Speak

The lack of a unified scientific policy is aggravating more and more the crises in the economy and ecology, is leading to the inefficient and incomplete use of the natural resources of a number of regions of the country, and is turning them into raw material appendages. While their scientific institutions cannot actively participate in the development of scientific and technical progress, inasmuch as industrial enterprises, as a rule, are under the jurisdiction of union ministries and departments.

Thus, in Kazakhstan there are no economic ties and proper contacts of the republic Academy of Sciences with sectorial scientific research institutes of union subordination, while there are more than 100 of them here. Various ministries, while exploiting for a long time the natural resources of the region, showed not concern either for ecology or for the creation of the elementary conditions for the normal life of the local population. As a result the scale of desertification and the destruction of the soil and plant cover grew catastrophically, man-made environmental pollutants increased.

In the early 1960's a number of prominent institutes were seized by a voluntaristic decision from the republic academy and were transferred to sectorial ministries. As a result it also lost its influence on the development of health care, power engineering, machine building, the construction industry of the earthquake-prone region, and other sectors of the national economy of Kazakhstan. Nevertheless directive organs of the country and the republic, as a rule, are holding academic science as a whole responsible for the slow pace of the acceleration of scientific and technical progress in the republic and the mistakes and blunders in the economy.

Thus, the republic Academy of Sciences, which has more than modest financial, material, and technical resources, is not capable of effectively influencing the pace of scientific and technical progress without the radical reform of academic science itself and without the change of the formed attitude toward basic knowledge. The times themselves dictate the taking of immediate steps on the decentralization and democratization of the system of the management of science. The settlement of questions, which are connected with the establishment and elimination of scientific institutions, of course, within the limits of the physical assets available at them, should be the prerogative of republic academies, otherwise it is impossible to make the obsolete network of scientific institutions flexible and mobile and sensitive to the new tasks of scientific and technical progress. In particular, under the conditions, when Kazakhstan is changing over to self-management and self-financing, it is important to remove 124 scientific research and

design institutes from the subordination of union ministries and to transfer them to interbranch scientific technical complexes and associations of republic subordination and to the Kazakh SSR Academy of Sciences.

In order to change radically the situation with the introduction of scientific and technical achievements, as well as to increase the share of products that correspond to the world level, it is necessary to form an integral economic mechanism that stimulates the innovation activity of enterprises. It is possible to form such a mechanism through a system of privileges, which provides for the exemption from taxation of the part of the profit (revenue) of enterprises, cooperatives, and other commodity producers, which is channeled by them into the financing of scientific and technical progress. Enterprises, which use developments that correspond to the world level, should receive the fullest privileges. Here the nature of the privileges should change subject to whether the enterprises use joint developments of Soviet and foreign scientists or buy patents, equipment, and technology abroad.

The question of the financing of basic research also requires immediate settlement. In connection with the changeover of republics to full cost accounting the situation, when their planning organs intend to allocate assets only for the solution of regional problems, is forming. Under such conditions it is advisable to carry out the centralized financing of basic research through the USSR Academy of Sciences. This will make it possible to avoid the decrease of the level of the work, which is being performed by institutes of the academies of sciences of the union republics, and to preserve the integral system of the planning and coordination of basic research within the Academy of Sciences of the country. It would be advisable to establish under the President of the USSR a committee for science and technology, of which prominent scientists and executives of the republic academies of sciences would be members.

Academic science is international in its essence—and it cannot be limited by any geographic or state boundaries. It can and should serve the noble cause of the rapprochement of the nations and nationalities of the USSR, especially now, during the difficult period of perestroika. For all of us it should be clear that without the development of basic science as the basis of scientific and technical progress neither perestroika nor the revival of our Soviet federation is possible. Under the conditions of a market economy specific mechanisms of the protection of science should be developed. In my opinion, at the 28th CPSU Congress it is necessary to analyze the causes of the lack of receptivity of the national economy to the achievements of science and to formulate the principles of scientific and technical policy.

Resolution on Increased Use of Kazakh Language in S&T Publications

907A0296A *Alma-Ata VESTNIK AKADEMII NAUK KAZAKHSKOY SSR in Russian No 5, May 90 pp 81-84*

[Decree of the Session of the General Assembly of the Kazakh SSR Academy of Sciences, issued 12 February 1990: "The Role of the Kazakh SSR Academy of Sciences on the Implementation of the Kazakh SSR Law on Languages and the Problem of the Active Use of Kazakh in Scientific Practice"]

[Text] The General Assembly of the Kazakh SSR Academy of Sciences considers that the passage of the Kazakh SSR Law on Languages is an important event in the sociopolitical life of the republic. The implementation of this law involves the accomplishment of a set of goal-oriented steps. However, the preliminary work on its practical functioning is still being performed poorly. The language situation locally by regions has been inadequately studied, specific measures of the stage-by-stage implementation of the Law on Languages have not been formulated.

The Kazakh SSR Academy of Sciences is called upon to become one of the basic centers for the implementation of the Law on Languages. Its scientific potential should ensure the active use of Kazakh in scientific practice and contribute to the increase of its social status and to the broadening and enrichment of its sociocultural functions.

Scientists of the Kazakh SSR Academy of Sciences have done certain positive work on the study of the problems of Kazakh and the national language coexistence of the peoples of the USSR. The institutes of linguistics, philosophy and law, Ugric studies, and others participated in the elaboration of the scientific concept of the language policy of the republic at the present stage, in the search for the optimum model of the constitutional law protection of the languages of the peoples of Kazakhstan, and in the promotion, interpretation, and explanation of the provisions of the draft, and then the Law on Languages. However, the majority of academic institutes are insufficiently active in the performance of preliminary work on the implementation of the Law on Languages. The Institute of Literature and Art imeni M.O. Auezov, the Institute of History, and the Institute of History, Archeology, and Ethnography imeni Ch.Ch. Valikhanov have not made a significant contribution. Their scientific propaganda possibilities were practically not put to use in the elaboration and implementation of the present language policy. The majority of institutes of the natural science and technical type are shirking participation in language restructuring.

Today the situation is such that at the Kazakh SSR Academy of Sciences Kazakh has not yet become a language of science and scientific intercourse.

The session of the General Assembly of the Kazakh SSR Academy of Sciences **RESOLVES:**

1. To change radically the attitude toward Kazakh as a language of science and scientific intercourse. The departments and institutes are to formulate a set of measures which contribute to the active use of Kazakh in scientific practice. To oblige the bureaus of the departments and the leadership of the institutes:

- to prepare a thematic plan of the output of scientific publications in Kazakh;
- for the purpose of stimulating the work of the terminology commission to establish as its subdivisions working groups attached to the departments, to envisage at every institute the staff position of responsible terminologist;
- to promote the expansion of the practice of writing dissertations in Kazakh (in all fields of science).

2. To formulate a program of the changeover of office work at the Kazakh SSR Academy of Sciences to Kazakh with the stage-by-stage accomplishment of the basic tasks. For the purposes of stimulating the use of the state language to oblige the Presidium of the academy, all the departments, and the boards of directors of institutes to prepare the materials of scientific sessions, assemblies, conferences, and other acts in the state language and the language of international intercourse simultaneously. In the system of the Academy of Sciences to draw up directories and visual agitation in the two languages.

3. For the purposes of the consistent implementation at the Kazakh SSR Academy of Sciences of the Statute on the State Status of Kazakh:

- to establish under the Presidium of the academy headed by the president a coordinating commission for the implementation of the Law on Languages;
- to provide the services of the Kazakh SSR Academy of Sciences with advanced equipment for synchronous interpretation and a staff of skilled specialists in synchronous interpretation, to seek possibilities for the financing of the material and technical base and the manpower and organizational structure of synchronous interpretation in the system of the Academy of Sciences;
- to form in the Kazakh SSR Academy of Sciences a system of the continuous training of specialists with Kazakh as the basic language in the development of planning scientific research work;
- to execute the decree of the Kazakhstan CP Central Committee of 18 October 1989 to assign the timely publication of the journal KAZAK TILI and the formation of its editorial board to the Institute of Linguistics;
- to establish under the Presidium of the Kazakh SSR Academy of Sciences an independent chair of Kazakh for the instruction of research trainees, seekers of degrees, and graduate students.

4. The Presidium of the Kazakh SSR Academy of Sciences, the departments, and their institutions are to

formulate a permanent set of measures on the promotion and the first establishment of the state status of Kazakh.

5. To commission the Institute of Linguistics:

- to develop a package of practical scientific recommendations on the theme "Kazakh as a Language of Scientific Intercourse";
- for the purpose of stimulating the activity of the reference and information linguistic service to form a department of applied linguistics, having allocated the necessary financial and physical assets and equipment.

6. The Center for the Study of National and Interethnic Relations:

- is to elaborate the theme "A Typology of Bilingualism and Polylingualism in the Kazakh SSR" and to prepare practical scientific recommendations on the introduction of bilingualism and polylingualism in various spheres of the vital activity of the population of the republic;
- is to compile a linguistic map of Kazakhstan;
- is to organize the study of language processes among Kazakhs, who live outside the republic and the USSR.

7. The institutes of linguistics and Ugric studies and the Center for the Study of National and Interethnic Relations are to be charged with the formulation of a set of practical scientific recommendations, which are aimed at the increase of the scientific methods quality of textbooks and educational aids in Kazakh, Ugric, German, Korean, and the languages of the other peoples of Kazakhstan.

8. To form at the Institute of History, Archeology, and Ethnography imeni Ch.Ch. Valikhanov a special department for the study of the history of the basic ethnic communities in Kazakhstan (Germans, Koreans, Dungans, and others).

9. At the Center of Oriental Studies, which is being established under the Institute of Ugric Studies, to organize a department for the study of the languages of the small peoples, which live in the Kazakh SSR (Koreans, Dungans, Turks, Kurds, Azeris, Iranians, and others), to set up the coordination of research in this area with the corresponding subdivisions of the Institute of Linguistics and the Center for the Study of National and Interethnic Relations.

10. The institutes of literature and art and history, archeology, and ethnography are to direct particular attention to the elaboration of the problems of the development of the national culture, literature, and art of the basic ethnic communities in Kazakhstan and to establish creative contact with their national cultural centers.

11. The Nauka Publishing House:

- is to attach priority importance to the publication of literature in Kazakh in the total output of the publishing house;

- is to regard as an important and urgent task the publication of terminological dictionaries, reference works, and phrase books, which meet bilingual requirements;
- is to strength and reinforce with skilled personnel the Kazakh and Ugric editorial offices, to settle the question of the printing support of the publication of Kazakh and eastern books (in Arabic, Latin, Orkhon-Yenisey, and Ancient Ugric graphics);
- is to organize trade in book products, to raise to the proper level the promotion of scientific literature in Kazakh, to open a store of the Central Office for the Dissemination of Literature Published by the Nauka Publishing House in Alma-Ata and its affiliates in all the oblast centers.

12. The Central Scientific Library:

- is to provide with bilingual (with Kazakh) personnel all positions that involve the direct service of readers;
- is to translate all information, order blanks, and so forth into the state language;
- is to compile sectorial dictionaries and phrase books (Russian-Kazakh and Kazakh-Russian) for library personnel.

13. The Kazakademsrab base:

- is to provide the Institute of Linguistics, the Center for the Study of National and Interethnic Relations attached to the Institute of Philosophy and Law, the Institute of History, Archeology, and Ethnography imeni Ch.Ch. Valikhanov, the Institute of Literature and Art imeni M.O. Auezov, and the Sociology Center attached to the Institute of Economics, which took part in sociolinguistic studies of the language processes in the republic, with advanced equipment (dictaphones, tape recorders, cassettes, duplicating equipment, personal computers, video and still cameras, and so forth) and transport;
- is to aid institutes in the organization of classes and specialized language laboratories for the study of Kazakh;
- is to meet the needs of institutes for typewriters with Kazakh type.

14. The Kazakh SSR Academy of Sciences jointly with the republic Ministry of Public Education is to formulate a program of the publication of textbooks and educational aids in Kazakh for higher educational institutions, tekhnikums, and schools of Kazakhstan.

15. The institutions of the departments of the Kazakh SSR Academy of Sciences jointly with higher educational institutions and other departments are to develop and prepare for publication terminological dictionaries in various fields of science.

16. The Kazakh SSR Academy of Sciences is to pose to the Kazakh SSR State Committee for Publishing Houses, Printing Plants, and the Book Trade the question of the significant expansion of the publication of scientific

literature in Kazakh, having directed attention here to the necessity of the translation of classical works and the writing of original works on the basic directions of science.

17. The Kazakh SSR Academy of Sciences jointly with the republic Union of Journalists is to formulate measures on the coverage of the course of the implementation of the Law on Languages and on the promotion of the achievements of science and technology in Kazakh.

18. To ask the State Committee for Television and Radio Broadcasting to introduce a special rubric in Kazakh, "Advanced Achievements of Science and Technology," having ensured here the active participation of a wide range of scientists of the Academy of Sciences and higher educational institutions of the republic.

19. The Kazakh SSR Academy of Sciences jointly with the Union of Writers of Kazakhstan is to formulate an extensive program of the preparation of popular science journalism, which is aimed at the development of the state language and the promotion of the languages of the other ethnic communities of the republic. The Academy of Sciences appeals to Russian-language writers to take an active part in the realization of the state status of Kazakh.

20. The departments of sciences are to submit reports on the work done on the implementation of this decree by 1 July of this year and subsequently to submit semi-annual reports to the Presidium of the Kazakh SSR Academy of Sciences.

21. The monitoring of the execution of the decree is assigned to the Coordinating Commission of the Presidium of the Kazakh SSR Academy of Sciences for the Implementation of the Kazakh SSR Law on Languages.

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President of Moldavian AS Reports on Republic's Science Progress

907A0286A Kishinev SOVETSKAYA MOLDAVIYA
in Russian 24 May 90 pp 2-3

[Speech by A. M. Andriyesh, President of the Presidium of the Moldavian Academy of Sciences, to the 17th Congress of the Moldavian Communist Party]

[Text] Our country and the Communist Party today are going through a crucial, critical period. The implementation of the program of the revolutionary perestroika of society is under way in the political, economic, social, and spiritual spheres. This process is developing in a difficult, contradictory manner. Along with the elimination of deformations and negative phenomena of the past, new problems, which are causing tension in society, are appearing. There is an urgent need for the implementation of immediate steps for the purpose of the reduction of socioeconomic tension, the improvement of the

national economy, and its changeover to cost accounting and self-management, which will give real rights to the republic and will predetermine its state independence. It is necessary to improve the economical situation and to solve the problems in the area of the supply of foodstuffs and many others. All are very burning problems, which are urgent and require strictly scientific approaches.

As was noted in the report of P.K. Luchinskiy, the successful accomplishment of the revolutionary perestroika of society depends decisively on the contribution of science. Today society is making rigorous, but valid demands on the social sciences, which, perhaps, suffered most of all during the period of stagnation, ignoring objective reality and passing over in silence serious shortcomings of a social and economic nature.

Social scientists today have acquired much freedom and have aimed efforts at the truthful coverage of the history and culture of Moldavia, at the examination of the problems of interethnic and interlanguage relations and democracy, and at the accomplishment of other tasks.

Linguists of the Academy of Sciences, for example, have launched work on the implementation of measures of the comprehensive program of the development and functioning of languages in the republic. A republic terminology center has been established. We scientists support with great enthusiasm the proposal on the celebration on 31 August of the day of the Moldavian language, since this is another opportunity to carry to the people all the beauty and charm of the Moldavian language.

Historians have organized the competition of scientific research on controversial aspects of the most urgent problems of the history of Moldavia. The implementation of the program of the socioeconomic independence of the republic and the changeover to a market economy have posed a number of completely new and difficult tasks, on the accomplishment of the which economics scholars have set to work. The problems of demography, the use of manpower resources, migration, and the social security of the population have become extremely topical.

The structure of the international economic and scientific relations of the republic should be established practically all over again. Their intensive development should be accompanied by the exchange of advanced technologies and scientific products, it should become the basis of scientific and technical progress and the introduction of information science.

It is now already clear: The low level of information and the neglect of scientific and technical progress are hindering the development of society. At the same time the contribution of scientific and technical progress to the increase of production efficiency in the republic is inadequate. In industry it is providing less than a third of the amount of the increase of produced commodities and labor productivity. In the area of agriculture the situation is even more complicated. Here about 80 percent of all the personnel are engaged in manual labor. The level

of the mechanization of technological processes in the sector of industry, which processes agricultural products, comes to only 40-50 percent. Republic industry has obsolete technologies, the equipment is worn out and obsolete. The construction of a computer plant, which the republic needs so much and which should ensure the implementation of the program of the informatization of society, which is being formulated, is being dragged out.

To our great regret, we are forced to state that in recent times the very concept "scientific and technical progress" has begun to be used very rarely. In pursuit of an immediate profit many enterprises are not devoting proper attention to efficient technologies and technical innovations. And this is all the more regrettable as the scientific and technical policy of developed countries gives absolute priority to programs of the training of scientific personnel and the development of advanced technologies. In the United States of America, for example, a special fund of these technologies was established. An international project of technologies of the 21st century, the financing of which will require billions of dollars, exists in Japan. Moldavia in the proportion of expenditures from the national income on science holds one of the last places in the country.

Scientists of our republic do not have an adequate material base and are faced with serious social problems. The construction of facilities of the Academy of Sciences is being carried out very slowly, its very large scientific, technical, and engineering corps, which is working in the area of solid-state electronics, microelectronics, and optoelectronics, thus far has not been provided with the necessary experimental technological base. At the time when precisely these sciences are the basis of the development of industrial sectors of the national economy with a high level of the integration of scientific achievements in production. The lack of the necessary premises is also affecting the activity of other scientific institutions. There are also no premises for the library of the Academy of Sciences. A logical question arises: What, in such a case, is the effectiveness of science? The analysis of the situation shows that science has enormous prospects, provided the results of scientific research are used intelligently. I want to cite just three examples.

Scientists of the Institute of Applied Physics of the Academy of Sciences jointly with specialists of the experimental plant developed a number of new unique technological processes, offering devices for the electric processing of agricultural products and equipment for the hardening and reconditions of parts of machines, the efficiency of which was shown by the results of their use at enterprises of the country and abroad. Unfortunately, in our republic these technologies are being used inadequately.

Scientists of the academy carried out selection and derived a number of ecologically clean bioregulators, which increase the durability of plants under adverse climatic conditions and boost the resistance to diseases, thereby eliminating the necessity of using pesticides.

Many scientific institutions of the country, as well as Hungary, Bulgaria, Yugoslavia, and other countries have shown a lively interest in these results. These bioregulators, which are being used here only at a number of farms, should also be disseminated in our republic. The same thing is also being observed with respect to the use of the scientific research of the Institute of Chemistry. It is also possible to cite other similar examples.

Today we admit that our scientific potential is far from exhausted. The necessity of perestroika in science, the drafting and adoption of a new charter of the Academy of Sciences, and the formation of a new attitude toward the development of science in the republic is also dictated by this. This would give the academy the right to evaluate objectively and independently social, economic, scientific, and technical processes and the ecological situation in the republic and to prepare proposals and recommendations for the Supreme Soviet and the government. The urgent need for the establishment of closer ties between science and national culture is being felt. Without science and culture the danger of degradation threatens us.

The basic means of modernizing the Communist Party of the republic and eradicating the deformations in the style and methods of work of party organizations of all levels were analyzed in the report. The taking by the party of forward positions of perestroika will require of all communists much effort, organization, and consolidation. Precisely communists should accomplish the most important tasks of society—firmly establish the ideas of socialism and develop an efficient economic system, ensure the increase of labor productivity and the priority of the interests and values common to all mankind in society, attract talented people, and try to convince those who have doubts.

For the present there is no answer to many questions. They need the further elaboration of theory on the basis of the study of the experience of mankind and require relentless attention on the part of science. All this confirms that the party cannot renounce science, if it sets for itself these noble goals.

In conclusion I would like to note that the scientists of the republic support for the most part the main ideas of the program of the modernization of the Moldavian Communist Party, which is being discussed, and will exert the maximum efforts for its implementation. On this level the thesis of the report on the decisive role of science and scientific and technical progress is of particular importance. I also want to propose that in the program of the modernization of the party the role and the prospects of the development of public education and culture would be specified more precisely.

Territorial Administration of Ukrainian Science, Technology

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UKRAYINSKOYI RSR in Ukrainian No 3, Mar 90
pp 21-24

[Territorial Administration of the Development of Science and Technology by Z.V. Mykytyshyn and M.F. Kryklyvets']

[Text] A characteristic property of changes occurring today in our economy is the fundamental renewal of the economic system. An important portion of this process should be the restructuring in the management of scientific and technical progress (STP). We acknowledge that Ukraine is lacking an effective management system for STP for assuring a harmonious integration of science and technology into the overall economic process. One of the ways to correct this situation is to improve the territorial planning and management, and introduce the broad use of fiscally responsible economic policies.

Let us clearly define the problems, which if solved, will result in a new management of STP in the region.

First, the new system's goal should be to satisfy public needs, provide a comprehensive and effective regional economy, a reasonable use of scientific technological production capabilities, and improve ecology.

The economy should be structured so as to encourage reduction of financial losses; it should aim for an increased efficiency in enterprises and organizations of the region.

An important aspect of this is to stimulate STP, for regional enterprises and organizations to create scientific and technological activities, which would produce a comprehensive, dynamic and effective development of territorial economy.

Of great importance is also the improvement in the regional administration of STP. This should assure the coordination of economic interests of the enterprises, various other sectors of the economy, and the regional and national economy as a whole.

Finally, the functions of various sectors of economy and territorial agencies, and methods of scientific and technical work must be clearly defined, which will result in increasing economic independence in this important segment of the economy.

A new approach to territorial administration of STP is an inherent part of the fundamental restructuring of the entire economic structure. It requires essential changes in planning, in the justification for the planning, and in setting of long term economic norms, systems of limits and indicators, which act as parameters of scientific and technical development of the regional economy. The use of computers and economic and mathematical methodology should play a significant role.

Territorial plans for developing science and technology accomplish specific tasks which are unlike those of various other sectors of economy. They can influence the apportionment of resources, and effective use of scientific, technical and production potentials. Regional plans for developing science and technology should be closely linked to the plans of the economic sectors and plans of enterprises. Only then can an effective development of the region, sensible use of all forms of resources and improvement in ecology in a given territory be assured.

It would be wise to have the development of science and technology in the region consist of the following elements:

- Control figures and economic norms which apply to enterprises (organizations) of the region
- Regional (interdisciplinary) scientific and technical approaches which are to be used by territory agencies
- Scientific and technical programs (tasks), which are to be completed in the region
- Regional orders (scientific and technical approaches) to be used by enterprises and organizations of the region
- Calculation of resources available in response to regional requests and use of approaches and scientific and technical programs (supply of resources) recommended by the region.

This type of structure, in our opinion, reflects specific objectives of territorial planning for the development of science and technology; it encompasses all aspects of scientific and technical progress.

It is important that all approaches which are to be used by planning should be directed towards the attainment of a comprehensive development of the region, the safeguarding of economic balance, reasonable utilization of resources. For this, we need to calculate the required level of production in the region, the amount of required resources available, and amount of utilization of these resources, keeping in mind the capabilities of scientific and technical approaches.

Selecting a maximally effective direction for technical development in the territory's system is an important part of planning a comprehensive scientific and technical program. Related to this is the acceptance of standards based on scientific and technical findings in enterprises, selection of optimal resources for planned approaches, and optimal distribution of investment capital for accomplishing interdisciplinary (regional) tasks. All this requires the construction of comprehensive economic models.

In order to assure stability of local budgets and raise participation of local agencies in accomplishing technical development, radical changes are needed in calculating profit into the budget. It is necessary to include within the local budget a sum which would be contributed to a regional fund for developing production, science and technology. This fund would be used for financing regional orders, scientific and technical

approaches and programs. The fund should be under the control of the Soviet of People's Deputies.

Major support for this fund can come through deductions from profit earned by enterprises and organizations as a result of fulfilling regional orders, through the use of specified approaches and programs, deductions based on the value of secondary raw materials, and materials from monies received from selling knowledge gained through research and development to other regions; other sources of funds can consist of a proportion of the local fines collected from companies for excessive utilization of natural resources—for violating laws on the use of natural resources, for stressing the environment in order to accommodate new technology—and a percentage of labor costs.

Half the monies (to the regional fund for developing production, science and technology) collected from fines should be used to finance development of production technology focusing on economic use of materials, energy, and minerals; comprehensive use of natural and other resources; and the utilization of secondary raw materials in the region. A significant part of the labor cost deduction and fees obtained from use of natural resources should be dedicated to financing and implementing resource conservation technology, highly productive equipment, effective materials and so on.

Management of scientific and technical progress and development in the region will be effective only if they are carried out on a basis of fiscally sound interaction. This means that a system of economic levers should be used (systems using indicators, profit, credit, stimulation).

The main criteria for selecting a system of indicators is the objective need to coordinate territorial planning and economic independence of production associations and enterprises.

An important step in this direction is the requirement which became effective in 1986, as a result of which developments in technology are taken into account when evaluating the bottom line of enterprises. In our opinion, this should be extended to evaluating progress in interdisciplinary, regional, scientific and technical approaches and programs. The non-completion of planned work, which is supported at the expense of the regional fund for progress in production, research and development, needs to be taken into account when evaluating a company's production and economic agreements, and especially agreements for fulfilling regional orders.

The strengthening of economic relations between local Soviets of National Deputies and enterprises should lean heavily on the production indicator in the control figures, where it is possible to identify the contribution of companies in the overall development of the region. For industries, the indicators used as control figures should

be set by local agencies; they should be based on maximal utilization of all resources available to production facilities in the region.

Indexes for overall production of petroleum, petrochemicals, chemicals, microbiological, metallurgical, food, forestry and woodworking products will be especially important. Among the control indicators, the extent of utilization of mineral resources and pollution of air should also be considered heavily. The calculation of these indicators should become mandatory when determining fines and calculating contributions from companies to local budgets, especially into the regional fund for the development of production, science and technology.

In creating fiscal responsibility between companies and the Soviet of National Deputies in the management of research and development, financial incentive, as a reward for accomplishment, should play a very important role. In collecting seed money for developing new technology by research and development organizations, the calculation must be based not only on annual production, but also on the frugality of the use of energy, raw materials and labor. This is in accordance with the theory that the conservation of resources is one of the main criteria of investment politics for the twelfth five year plan.

It is wise to introduce a sense of material responsibility by assessing fines for not using appropriate scientific and technical approaches as indicated in the plans, and for not completing work according to plan. The amount of fine should be calculated on the basis of cost of losses caused to the economy of the region as a result. In compensation of losses caused to the region by an enterprise, fines should be paid, including for breach of contract, in addition to other sanctions in accordance with laws governing organizations in the USSR. These fines should be one of the sources for the fund for the development of production, science and technology.

The total costs in payments to local agencies by enterprises in accordance with currently applicable statutes, should not exceed 30 percent of the seed funds given them for the current operating period. If the total fines exceed designated limits, payment should be spread over a determined period of time.

Organizational restructuring in managing research and development is carried out in our country by reviewing, assigning and reassigning functions, rights and responsibilities among all branches of government—from economic departments, ministries and territorial agencies, to enterprises; it is also fostered by improving organizational structures. The solution to significant regional problems, which will be solved by creating and implementing new forms of production, new technology, and materials for interagency use, can be effected through cooperation between scientific, research, design organizations and enterprises, the so-called research-production cooperation.

An important link in the organizational structure of territorial management should be provided by the computerized subsystem for the control of regional research and development, which is under the management of the Oblast Executive Committee of the

Soviets of National Deputies. Certain portions of management of research and development should be managed by a computerized subsystem of the region: prediction, programming, planning, calculation and monitoring.

S&T Cooperatives Complain About Governmental Interference

90740289A Moscow *TEKHNIKA I NAUKA* in Russian
No 5, May 90 pp 14-15

[Interview with Dmitriy Aleksandrovich Yakovlev, chairman of the Council of Scientific and Technical Cooperatives, by M. Orlova: "Will the Monopoly Have a Competitor? An Interview With Chairman of the Union of Scientific and Technical Cooperatives Dmitriy Aleksandrovich Yakovlev"; date and place not given]

[Text] **TEKHNIKA I NAUKA:** Given our developed, at least quantitatively, network of scientific organizations—academic, sectorial, VUZ [higher educational institution], are small forms—scientific and technical cooperatives, also needed?

D. A. Yakovlev: The logic is simple: Since they have appeared, hence, they are needed. There are about 8,000 scientific and technical cooperatives in the country. This is still not enough. In essence, the formation in our country of small innovation organizations is just beginning in contrast to civilized countries, where preference is being given precisely to them.

For example, about 19 million similar small firms—approximately 80 percent of the number of scientific institutions and 50 percent of the total labor employment in science—operate in the United States. They also yield 70 percent of all innovations, and not such monsters as General Motors or General Electric.

Our scientific and technical cooperatives are also capable of something. In 1988 they performed work worth 500 million rubles, while in 1989—1.2 billion rubles.

TEKHNIKA I NAUKA: Can the scientific and technical cooperative compete with the institute? These are too different weight categories....

D. A. Yakovlev: I will cite as an example my own engineering and technological cooperative: 60 percent of its jobs contain inventions. The annual plan includes 250 themes, the amount of research and development is more than 5 million rubles. So that in efficiency the cooperative is entirely on the level of a medium institute. There are also advantages. The cost of jobs is often less than that of state jobs, the time of completion has been reduced to one-third to one-half. For scientific and technical cooperatives there are no large and small jobs. There is the degree of complexity. Therefore, they undertake any matter in contrast to large organizations, which avoid unprofitable and risky themes.

The spectrum is very broad. This is the development of new technologies, robotics, and means of automation and satellite communications, the growing of crystals in space, construction materials made from production waste, and prostheses for disabled people. It would be possible to list them ad infinitum.

TEKHNIKA I NAUKA: Hence, are scientific and technical cooperatives not only a competitor, but also an alternative to state science?

D. A. Yakovlev: A competitor and, I would say, for the present a supplement. Although they have already begun one important matter. The new form of the organization of science is an undermining of the monopoly, the main perpetrator of our lag in science and technology. Moreover, the lag has been incorporated in our system of planning and financing. For example, an institute, which a vice president of the Academy of Sciences heads, receives in principle more assets than an institute, which a corresponding member directs, and so on. Not jobs, but individual people or groups are financed.

TEKHNIKA I NAUKA: But what about the ethical aspect of competition? Scientific and technical cooperatives exist, as a rule, under institutes. The same personnel, one material and technical base. The apprehension is arising that specialists will prefer to embody their ideas in a cooperative, where they will receive significantly more, and will not conscientiously fulfill their duties at the institute.

D. A. Yakovlev: A few counterarguments. First, tens of thousands of developments, which it is possible to introduce with an enormous economic impact, for the benefit of people, are already lying on the shelves of scientific research institutes and design bureaus. Scientific and technical cooperatives can take this upon themselves. Second, for the scientist and specialist intellectual creativity is a way of life, not service from and to. Now he supports the idea that he works with his head during the time off from work and can also receive money. Third, at institutes expensive equipment is idle. This is the people's money. In the name of what have bureaucrats from science appropriated the right to withdraw it from circulation? Is it not better to lease this equipment to the same cooperatives.

But, for the most part, I am personally not a supporter of their departmental attachment.

TEKHNIKA I NAUKA: Today society and state organs have an allergy to cooperation. Does it apply to scientific and technical cooperatives?

D. A. Yakovlev: They are in a worse position than trade, purchasing, public dining, and other traditional cooperatives. Take if only taxation, which places innovative activity in a completely unequal position. Many state enterprises and organizations pay a profit tax of up to 15 percent. Traditional cooperation also pays from the profit—30 percent. A profit tax of three to 35 percent has also been established for centers of scientific and technical creativity of youth and centers of scientific and technical services. Scientific and technical cooperatives deduct 25 percent from the revenue. This comes to 75 percent of the profit. Practically nothing is left for development. They sell raw materials, materials, and equipment to them for two- to sixfold more. They do not lease premises, they require that scientific and technical

cooperatives would operate in personal apartments. The continuous organization of bribery and the creation of situations that give rise to crime are occurring.

Sublegal acts are endlessly appearing. First the Supreme Soviet of Uzbekistan makes the decision to shut down scientific and technical cooperatives, then the Dnepropetrovsk Oblast Soviet Executive Committee and the Moscow City Soviet have now begun a campaign against them. There are already more than 850 acts on scientific and technical cooperation, which are at variance with the law. As always, we are fighting against those who work.

We submitted to the State Committee for Science and Technology a proposal on the development of small innovative forms. It wallowed just as easily as many others. Now we are preparing for the All-Union Central Council of Trade Unions, the USSR Supreme Soviet, and the Council of Ministers materials on the misinterpretation of the Law on Cooperation.

TEKHNIKA I NAUKA: "We" is the Union of Scientific and Technical Cooperatives, which unites, as far as I known, about 700 organizations. Was it established as one of the forms of the opposition of coercion from without?

D. A. Yakovlev: Legal protection is an important part of the work. But, of course, not the only part. In principle the Union was established because for scientific and technical cooperatives the need for interaction had become ripe. What for?

First of all for contact. Every Thursday we hold meetings of the business club, at which up to 100 people from the entire country gather.

The need for the exchange of information has arisen. We are setting up an information center, at which any scientific and technical cooperative can find out, for example, where developments and what developments have been made and what orders have been received. And we are now also establishing the Manpower Resources Automated Management System, so that specialists would know at what cooperatives they can perform work of their direction or implement ideas.

Several scientific and technical cooperatives are ready for international cooperation or appearance on the world market. We have already organized an international agency in order to help in the search for partners, in case of negotiations and the conclusion of contracts, and in the study of the market.

And, perhaps, the most important thing is the combining of efforts for the fulfillment of major jobs, such as the comprehensive ecological program. The first stages have already been started. We are carrying out on a contractual basis the ecological certification of enterprises in order in each specific case to introduce waste-free technology and a treatment system or to recovery the waste products. We have undertaken to make an evaluation of

the Vladivostok Nuclear Power Plant. In general here approximately a third of the cooperatives are working for the benefit of ecology. They have developed such equipment, for example, as drum biofilters and fuel systems of furnaces for petrochemistry. The latter was nominated for the State Prize.

Another program, which we will fulfill by joint efforts, is the Farm Program. It includes about 100 developments: from means of mechanization to the construction and engineering support of autonomous peasant farms.

Practically all our cooperatives produce consumer goods. Namely those, of which today there is such a shortage—plumbing fixtures, furniture, personal computers, sporting equipment, trainers, earthquakeproof houses, and much more. Per ruble of the wage we produce consumer goods worth 50 kopecks, while state enterprises produce on the average consumer goods worth 18 kopecks.

A charity fund has been established under the Union. We intend to allocate the assets for assistance to the small peoples of the Far North, who are in dire straits.

TEKHNIKA I NAUKA: I know that you head the Union of Scientific and Technical Cooperatives as a public service. Recently you also became the public chairman of the central committee of trade unions of workers of scientific and technical cooperatives, enterprises, and organizations.

D. A. Yakovlev: All our activists adhere to such a principle. We do not want to formalize socially useful initiatives. In the Union only the administrator of affairs and the chief accountant receive a wage, while in the trade union the deputy chairman and the secretary do. As soon as people make the management of a public organization their direct affair, corrupt strata immediately form and the administrative bureaucratic system is repeated.

Recently the central committee of trade unions became a legal entity. Together with the Council of Scientific and Technical Cooperatives, we hope, it will be possible to change the policy with respect to independent innovators.

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Academicians Discuss Role of Science in Perestroika

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[Report by N. Gogol, I. Mosin, and A. Pokrovskiy on PRAVDA round table chaired by Academician I. Frolov, secretary of the CPSU Central Committee and editor in chief of PRAVDA: "Scientists and Perestroika"; date not given; first two paragraphs are PRAVDA introduction]

[Text] As was already reported, one of the preconference meetings at the editorial office was devoted to the role of science in our perestroika. Chief Scientific Secretary of the USSR Academy of Sciences Academician I. Makarov, Academicians A. Ishlinskiy, V. Kirillin, and V. Sokolov, Corresponding Member of the USSR Academy of Sciences and Director of the Institute of Philosophy of the USSR Academy of Sciences V. Stepin, Chief Scientific Secretary of the Presidium of the USSR Academy of Medical Sciences D. Sarkisov, Director of the Institute of Normal Physiology K. Sudakov, Rector of the Moscow Medical Academy imeni Sechenov M. Paltsev, First Secretary of the Board of the Union of Scientific and Engineering Societies and USSR People's Deputy A. Vladislavlev, USSR People's Deputy V. Bushuyev, V. Radin, chief designer of the Plant imeni Vladimir Ilich, and A. Yezhov, head of a department of the Central Scientific Research Institute of Economics and Management of Construction of the USSR State Construction Committee, came to this meeting at the editorial office. V. Gubarev, a member of the editorial board of PRAVDA and editor for the Science Department, participated in the discussion.

Academician I. Frolov, secretary of the CPSU Central Committee and editor in chief of PRAVDA, conducted the meeting.

I. Frolov: The basic and main problem, which faces us here, is to discuss the social status of science, how it is changing now, and what it should be. And accordingly also to discuss the social role of the scientific and technical intelligentsia.

We said very much before about the fact that we need the fundamental combination of the achievements of science and technology with the advantages of socialism. But in general nothing weighty and appreciable came from this "combination." Something broke down in the very mechanism of combination. As one of the characters of "The Artamonov Affair" said: "The covered wagon has lost a wheel." Scientists continue to be cursed from all rostrums, no matter what intense work they perform.

What is to be done in this situation? Perhaps, such a moment, when it is necessary to put to more use the existing, say, academic structures, is now ripe. Why cannot the Academy of Sciences obtain a greater sociopolitical status than the new organizations and associations, formal and informal, which are now being established in abundance? The academy is the academy. And then they will take it more into consideration as a sociopolitical structure, and not just as an assembly of men of science.

I am no longer talking about the fact that diverse forms of evaluation—ecological, social, humanitarian, and so on—should be carried out at the academy, but precisely the academy can play its role here. But for this it is necessary also within the academy to examine sociopolitical themes more and not to become isolated from the

processes of the humanization of the sciences and the combination of science with culture, believing that man is the center of science.

The voice of scientists, engineers, and representatives of the scientific and technical intelligentsia should be more weighty and independent, such that society would take it properly into consideration. For if you calculate in earnest what science has given the country, literally an unpaid bill will result. In our country scientists are often regarded as some kind of parasites.

The Academy of Sciences is a structure, which has gone through various eras and has passed through our entire history. This alone gives it grounds to compete with any newly appeared associations. But for this it is necessary to overcome the enormous strata of the lack of culture and militant rudeness, which in our country, unfortunately, are still thick. One of the most predominant shortcomings of perestroika consists in the fact that the very good stimulus, which was provided by the June 1985 conference on scientific and technical progress, has essentially disappeared. Hence the very many failures in ecology, in the social sphere, in the area of culture, and so on.

One of the causes of this is the moral climate that has formed in our society around science and the scientific and technical intelligentsia. They are often accused of a lack of democracy. But we will say frankly: Science is a pursuit that has been elite from time immemorial, it is impossible to settle scientific issues by a vote.

I. Makarov: I want to start from the thesis, which was stated by Ivan Timofeyevich, that the Academy of Sciences is a scientific, social, and, perhaps, to some extent a political structure of our state. Even during the most difficult periods of its life the academy in the area of basic scientific research was at a quite high level. It is another matter that its implementation and introduction and the combination of science with technology were accomplished mainly on paper. And all the same it is necessary to treat basic research, it seems to me, with a slightly different standard and with a slightly different approach. It should be financed by the state.

But such an attitude toward science in recent times has been very greatly distorted, and, pardon me, not without the help of our respected press. The tendency to restructure, alter, and break up basic science has appeared. But without it the industrial might of the state simply cannot exist.

Academician D. Likhachev is utterly correct when he says with such uneasiness that it is necessary to raise the overall level of culture of the people and education. But how can it be otherwise, if the wage of a scientific associate is 30 percent less than the average wage for the country? The supply of our institutes with scientific equipment, let us say frankly, is poor. Now we have been faced with the problem of "the drain of brains." Under such conditions they will "drain." The country has become open, you are able not simply to flee the Soviet

Union, but to conclude a contract and go to work. Here last year alone on such terms 260 people left the Academy of Sciences. It is a question of skilled specialists, who were hired in addition as directors of foreign institutes. And many young people are now glancing either in the direction of abroad or in the direction of cooperatives. With whom will we be left, especially if you consider that 15-20 years are spent on the training of a young generation of scientists?

And now about what has already been mentioned here, but about which it is not customary to speak. There cannot be science without an elite, that is, without prominent scientists and leaders in their own direction. Just as literature, painting, and art cannot develop without prominent writers, artists, and directors. And we have such people. Suffice it to say that representatives of the Academy of Sciences head 40 international scientific unions. Is this not international recognition? Meanwhile, within the country we are hearing mainly criticism. It appears that we have become accustomed to cursing each other and rejoice when the neighbor's dacha is on fire. Let him build a good dacha, and let us rejoice over this!

Social scientists have an especially complicated status. Now they are being criticized especially much.

V. Stepin: Of course, the status of social scientists is more complicated than that of natural scientists. If only because when they say about a scientific theory: It is the only correct one, then, hence, it has already ceased to be scientific, hence, they have canonized it and turned it into a dogma. And I dare to assert that much in our social sciences was in accordance with the department of just such an ideological, mythological consciousness.

But this does not mean that we did not have social science. In the 1970's we had a breakthrough primarily in the philosophy of natural science and the history of philosophy. Namely by relying on it, we are now as if cultivating a new spiral....

Another difficulty consisted in the fact that in our country the class barrier was clearly marked. There was "our" and "not our" science. This hindered the development of social science thought. Perestroika has changed much here. Philosophers, economists, and historians have seen themselves not simply as a separate isolated Soviet group, but as a part of world scientific development. A specific part, but a part.

But for decades, I will remind you, they literally annihilated every manifestation of lively thought. And here is what is resulting—now they are criticizing those who held out in this confrontation. Moreover, glimmers of new approaches are often not appreciated socially. For example, the work "Osnovy marksistsko-leninskoy filosofii" [The Fundamentals of Marxist-Leninist Philosophy] is very revealing. There the humanistic world outlook is asserted as the primary thing, man is at the center of philosophy. Kant and Hegel are not only the predecessors of Marxism, they worked independently, they constitute the content of our philosophical world

outlook. This is an independent direction, within the framework of which individual aspects of being and man were studied.

Further I dare to assert that, in spite of all the assurances that our policy was scientific, it was never fully based on science. What we call the social sciences was perceived rather as ideological support of decisions that had already been made. The term—ideological support—was even such. Many decisions still do not undergo social science evaluation—this is an indisputable fact.

And the last thing that I would like to note here. Is it possible to demand of social science that it would give us as if a calculation for all events of life, like they calculate some technical component? I believe that if we are dealing with society, and this is a most complex developing organism which includes human consciousness, it is simply impossible to calculate its social trajectory.

Under Stalin, during the era of industrialization, precisely such a methodology was adopted. People are screws, the party is the motor, the drive belts from it are the trade unions, and so on. This conception of the mechanism, which turns and is put into motion by party force, is not accidental. A specific attitude toward society as a quite simplified system is behind it.

Such a vision of social processes existed in our country for a long time and gave rise to a situation, which to this day is alive in populist consciousness. We can and should, they say, demand of scientists that they give us a schedule for all events of life, for what we are to do by days and hours. This situation, I believe, can be attractive for its external environment, but it is inefficient. A different approach is required here.

The analysis of the possible scenarios of social development is needed, moreover, for this it is worth assembling very large associations of scientists of different types—social scientists, mathematicians, and economists. But for the present such an organ, which would deal with the analysis of the possible lines of social development, is lacking in our country. Yet the conditions now exist for this, inasmuch as perestroika has given us a certain freedom of spirit, which is a most important condition of scientific, objective research.

Retort: All this is good. But we, who are not philosophers, would like very much to know: In what kind of society do we live now?

V. Stepin: There will be no unequivocal directive reply to this question now. Discussions are under way, people are reflecting, and we are reflecting on this.

V. Kirillin: All of us say very often: give equipment, give money, give premises, give more of a wage. But from where is one to get this? For we are simply poor. Why?

It seems to me that it is for two reasons. First, we have an extremely low product quality. And precisely due to the fact that the so-called introduction of scientific achievements has been organized awfully.

Another reason is the decline of the level of education. For in our country physics instructors cannot say anything beyond Newton. But it is necessary to visualize if only in popular form what the theory of relativity is. All of us must work on this together. And, dear Igor Mikhaylovich, you will not get any money from anyone, if we do not settle this issue.

D. Sarkisov: The situation in our medicine seems even more deplorable and more grave to me. We talk about the quality of work, but in our area there cannot be any mistakes at all. Nevertheless, for many years now medicine, and particularly medical science, has been living under the conditions of so-called remainder financing. Here it has already been said: Tens of billions of rubles are being allocated for science in our country and hundreds of billions of dollars are being allocated in the United States. But I want to draw your attention—this is the dollar. But what can we buy with our money, when it is a question of the latest medical equipment, advanced electron microscopes, and so on?

V. Kirillin: We make an electron microscope fairly well, but this is not enough.

D. Sarkisov: But worse, all the same worse. If money is available, we buy instruments abroad. It is all this that is of fundamental importance. It is simply disastrous for science to be on the remainder principle further.

It seems to me that we are greatly exaggerating the curtailment in our country of administrative command methods of management. Suffice it to recall the incident with "blue blood." Now, as is known, there is a critical situation with donor blood. People are afraid of giving blood, fearing AIDS and viral hepatitis. Many fields in medicine, in which it is impossible to manage without artificial circulation: These are the transplanting of organs and in general all major operations, are in a catastrophic state. The development of blood substitutes is considered today task number one throughout the world. Meanwhile, in our country this work has been halted. For 4 years the procuracy has been holding back the materials of research, although there absolutely everything is clean, which a commission of the Ministry of Health has confirmed. For this is the "micro-affair of physicians!"

And the last thing on which I wanted to dwell. In my opinion, scientists have eased up the work on the ideological front. We are not repulsing the obvious distortion of facts, or else simply mysticism. If you believe some historians, what there was before 1917 in Russia is an ideal situation. This is far from the case.

Now mysticism has blossomed forth. Yesterday I was walking by the House of Culture. I saw an announcement, "Life After Death." The hypothesis of existence beyond the grave and its substantiation. Meetings with dead people. The technology of "dying." What is this? Is the basic purpose of science really not the combating of ignorance?

A. Yezhov: It seems to me that all the same we should not separate the system of science from the general state of affairs and the condition of the system of our society as a whole. The system of science reflects it and needs substantial radical restructuring, which, unfortunately, has thus far not been spoken about today.

I agree that we should have in science an elite, just as in other areas of human activity. But this elite should not be cut off from the people, from the bulk of scientists, which is what we have now. Moreover, we have now a bulk of scientists, who are in a legal position without rights. This existed at the beginning of perestroika and also remains now.

For example, it is possible to dismiss a scientist from an institute, from a place of work, and up to now he does not have the right to be reinstated through the people's court. That is, the scientist has been deprived of general constitutional rights.

I. Makarov: It is impossible to dismiss anyone, in general in our country it is impossible to dismiss anyone.

A. Yezhov: It is possible to cite many examples. Moreover, a special public committee attached to the union of scientific and engineering societies, which deals with this social and legal protection of scientists, has even been established. If the leadership of the Academy of Sciences wishes, we can cite specific cases—simply reprisals on talented scientists, as a result of which our country has lost much.

And a second thing: the material and moral aspect of the status of the scientist. I do not agree with the comrades who underrate the material aspect and attempt to depict those people, who leave the system of the Academy of Sciences, as counterfeit scientists. While we have such a psychological sentiment, we will not advance far in perestroika. Thus, this concerns not only scientists. In many sectors in our country a person cannot earn a lot of money by honest labor. The paradox in general of our economic system as a whole lies in this. How is the remuneration of the labor of a scientist carried out? It is directly connected with the existence of degrees and titles and accordingly with positions. And not with the end result in science. Science is suffering greatly and, incidentally, our economy and society are suffering from this.

The system of the Academy of Sciences is more than 250 years old. Yes, definite experience has been gained. But no one has dealt in earnest with the restructuring of the system of the Academy of Sciences. Yet it needs such restructuring.

Retort: That is what you believe, while someone believes otherwise. What is to be done?

A. Yezhov: It is possible to hold a referendum among scientists. It will make it possible to answer this question.

Retort: Scientific questions are not settled by referendums.

I. Frolov: We have already heard repeatedly the suggestions in general to eliminate the academy. Previously they simply said to break it up, now they are saying that it is necessary to restructure it. But why, strictly speaking, are they saying it? In my opinion, by its existence it has already proven that it is capable of developing itself, changing, and so on. It is easiest of all to raze it. We razed monuments, we razed churches. Let us now also raze the academy....

Count how many positions Petr Leonidovich Kapitsa had. Does it turn out that it was necessary to start a campaign against monopolism? But Kapitsa, Engelgardt, and others did not aspire to hold these posts. They were needed by the scientific collectives which invited them. Their talent and their experience were needed. There exists in the end such a concept as traditions in science. The disdainful attitude toward outstanding people and toward the intelligentsia as a whole in its essence is aimed against culture and against society as a whole.

K. Sudakov: In his day Ivan Petrovich Pavlov wrote a very interesting article which was entitled as follows: "On the Mind in General and on the Russian Mind in Particular." The most curious arguments about the aristocracy of the mind are found there. Of all types of aristocracy, Pavlov wrote, the aristocracy of the mind is the highest aristocracy. He appraised the scientist as the highest aristocrat in cultured society. Now the devaluation of these values is occurring in our country.

I want to express several views in development of the thought with respect to the role of science in society. A specific example from the sphere of my scientific interests. While arguing about scientific and technical progress, we actually forgot the person who is participating in it. We sent him to interact with a machine, with rockets...and forgot him. For our ideology is such that a person can do everything. And especially our Soviet man, one has only to inspire him ideologically, and he will agree to any exploit.

Nonsense! Research in the area of normal physiology has shown at what a heavy price a socially significant result comes to a person today. It turned out that at plants among young fellows, who are considered healthy in practice, normal physiological functions remain only among 20 percent, while 80 percent on the job attain the result of strain.

Practical medicine does not detect this. After work the mechanisms of self-regulation restore the general state. But a person goes to work every day, he should achieve this socially significant result every day. And then in a year or two he has been transformed—hypertension or a pre-infarction condition or, as happens more often, neurosis and so forth. And it is already impossible to turn back.

A person comes to a physician when he has already become ill, while at the stage, when he is getting the disease, there is no check. No one bears any responsibility, for example, none of the servicemen, when quite

young people come from the army as ulcer patients, as sufferers of hypertonia.... Absolutely no one is accountable.

Thus, returning to the thought about the role of science. There exists about us, physiologists, such an opinion that we conduct experiments on mice, experiment on animals, and that is all. That is how society usually regards us. But how is it in reality? We not only gave recommendations, but also introduced them in practice. It turns out that it is possible to rehabilitate a person, without having let him reach the stage of illness. And, moreover, not by drug methods. In one shop of the Khromotron Plant rehabilitation procedures were used, that is, we established as if external self-regulation. As a result we began to relieve the strains of a significant portion of the workers.

They do not believe us. When we reported this in the Moscow City Party Committee, after a while there came to the shop a correspondent, who asked the workers whether there was actually such an effect. While the workers said in unison that we will not leave this works, because here they are following our health. We feel that we have ceased to be sick and come to work with pleasure. Do you understand? The psychology of the individual is changing. The individual, who all the time experienced at the plant oppression and physical strain, feels completely different. Such is a specific contribution of science.

V. Sokolov: We have a very low cultural level. Many people do not understand for what science is needed. Now we, for example, are studying the tropics. Well, it would seem, why study the tropics? Even in the Supreme Soviet there was a statement on this theme. Scientists, they say, have nowhere to spend money. But we breathe oxygen, which is a product of tropical forests. If we do not study tropical forests, if we do not protect them precisely here, in the north, we will ruin our future generations. It is necessary to promote in every way the works and research of scientists, so that people would understand with what they are dealing.

And about the academies. I have been in the academy a relatively short time, but still, it seems to me, it is necessary to leave it in peace. Let it develop according to its own laws. For what are the national discussions and a referendum: How is one to treat the academy? Incidentally, in the 1920's absolutely the same thing happened as now. They demanded that national referendums with regard to the academy be held, so that all scientific associates would elect members to it. It is an amazing similarity. It is necessary that the institution of engineers and scientists would actually hold the position which it deserves in the country.

A. Ishlinskiy: Our scientific and technical societies began their activity 125 years ago. This is the oldest society in the Soviet Union. It set itself a task—the improvement of industry and agriculture. Our main task is the improvement of technologies and machines. Now,

it is necessary to say, cost accounting centers and small enterprises have given our activity a new stimulus.

The yield of science does not appear immediately. Take quantum mechanics. It emerged at the beginning of the century, while lasers appeared about 20-30 years ago. With regard to higher education. I was just in London. They are devoting very much attention to the higher school. That is, they periodically review the programs and see to it that they would teach what is needed and would regard as of paramount importance what we call the basic sciences: mechanics, mathematics, computer technology.

M. Paltsev: Why do scientists not go to organs of Soviet power and not nominate their own candidates in the numerous elections which are now being held in the country? There are two circumstances here. First, to devote one's life to work in organs of Soviet power means to forget about science. But there is also another aspect of the matter. Unfortunately, today the title of professor, academician, director of an institute, and head of a chair is identified with representatives of the administrative command system. And if you read the leaflets of scientists, say, a chemistry professor; he does not, after all, write in them about his works in the field of chemistry, but speaks about what works in the field of chemistry he came out against. And this direction is traced very clearly in all the campaigns. Therefore, today, unfortunately, among both the delegates of the congress and the delegates of many party forums you will not see many prominent scientists.

Now, about the higher school. I can once again repeat after my respected colleagues: Leave the higher school in peace! As before we have a plan, although it has been officially repealed, as before in case of assignment the Moscow City Soviet is demanding that the number of physicians, which it needs, be allocated. We cannot send undergraduates who have graduated to work at the academy. This year our institution sent only six people to the system of the USSR Academy of Medical Sciences. All the others went to work at polyclinics, but among them there are many talented undergraduates.

The interest in the basic sciences is declining sharply. The commercialization of science and health care is occurring. This is having the result that today among young people the desire to devote themselves to the basic sciences is disappearing. We together with the Academic of Medical Sciences opened a faculty of the training of scientific and science teaching personnel. We are accepting there talented undergraduates after the completion of the third year. Thus, 16 people submitted an application for the 20 places that were announced in basic disciplines. While for clinical disciplines the competition came to three or four people per place. This is a very revealing example.

When three years ago I came to the former leadership of the Moscow City Soviet and raise the question of the critical state of the oldest clinics of Devichyey pole, of

which the entire country is proud and which they know abroad, Saykin said: We do not need the 1st Medical Institute. I have problems with the tidying up of roads, with the cleaning of streets, with vegetable bases, while the 1st Medical Institute is the pain of the USSR Ministry of Health. Let the Ministry of Health deal with it as it wishes.

It was quite correctly stated that one must not separate the higher school and science. Today it is being heard more and more loudly: The higher school should receive nonbudget assets. Yes, the higher school should earn nonbudget attests, which can supplement its budget. But they should not be the basic source of existence. This would be a tragic mistake for us.

Today, unfortunately, the young talented person cannot completely reveal his abilities at the present higher school. He does not receive access to computers, to a sufficient quantity of foreign literature, that is, to various sources of the information that he needs. I am not talking about the fact that our undergraduates study many types of equipment from tables or at best from mockups.

V. Radin: I work at the meeting point of science: academic, sectorial, and plant. And the first thing, with which I want to start, is the thought that we are poor and it is necessary to learn to earn money. We have a very great inertia of thinking, and in no way can we overcome it. It is impossible to introduce new equipment by any appeals. It is possible to introduce it only by economic methods. This is the only thing that will save us.

Has perestroika yielded anything in this respect? However paradoxical, it has already yielded something. Enterprises, I sense this at my own plant, have become more interested from the standpoint of survival in the introduction of new equipment.

We, for example, together with the Institute of Nuclear Physics of the Siberian Department of the Academy of Sciences have begun the introduction of electron accelerators. Together with the Institute of Crystallography and the Institute of General Physics we have begun to work on the introduction of lasers. Why are we doing this? Because science-intensive items are the profit of the plant. The assimilation of these items is enabling us now to carry out the basic reconstruction of the plant.

And another factor. Conversion has begun. The electronics industry makes lasers. Previously they all went to the defense sector. Now they have appeared in civilian industry. And we are working on making a better laser than the one which the defense industry makes.

A. Vladislavlev: I believe that now many people are seeking an answer to a fundamental question: How is the prestige of our science to be raised?

The decline of prestige is connected with many factors. One of the primary ones consists in the calm contemplation of these processes by scientists themselves. Another reason is the lack of receptivity of our economy to what

is new. If the people do not see the introduction of these scientific achievements, about which the press is writing in real practice, what kind of prestige can this science have? Therefore, if we want to increase the prestige of science, the first thing that we should do is to change the economic mechanism, to change the economy, and to make it receptive to what is new. Then science will get a second wind.

The fate of science, it seems to me, in many respects depends on what civic position our scientists will take. And history suggests many examples of similar activity of specialists. I would like to recall P.L. Kapitsa. You and I know well his position not only on questions of physics. We know about his correspondence with Stalin and Beriya during the most difficult times. Therefore, it seems to me that the raising of the sociopolitical and social status of our science and of the entire scientific and technical complex is task number one. And only we ourselves can accomplish it.

V. Bushuyev: I speak in three persons: For 15 years I was the director of a sectorial scientific research institute, now I am the general director of the Siberian Power Engineering Association, while I receive a wage in the USSR Supreme Soviet. It seems to me that science, especially basic science, and party organizations have something in common. They were all cut off somewhat from the consumer, from man, for whom they should work.

Today the opposition of the population and science is being observed. Scientists are cooking in their own juice. Science, which does not feed on the juices of public opinion, will all the time be in some isolated position.

They say that basic science does not owe society anything. I cannot agree with this. Look, by means of what does basic science develop throughout the world? Not only by means of state subsidies, but also due to the fact that various enterprises and organizations invest money in it.

Now it is necessary to aid and support scientific enterprise in every way. One must not think that man has been cut off from material benefits. A hand will not be raised to criticize the scientist, who has gone somewhere, because there they pay him 700 rubles, while at his own institute he receives 150 rubles.

What is it possible to do? To provide the opportunity by means of temporary collectives to earn well. Unfortunately, society in our country for the present treats negatively such scientific enterprise. There are quite a large number of examples. A unit, which exceeds world-class indicators, was developed here. When we asked Americans how much they estimate it to be worth, they replied: 2 million. We paid the author of the development 20,000. Thus there were 15 audits last year.... Science needs not audits, but support and respect.

Court Decision Refuels Blood Substitute Scandal

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[Article by Aleksandr Ryskin: "Blue Blood"—A Patent for 'Gentlemanliness'; words in boldface as published; first three paragraphs are OGONEK introduction]

[Text] In the name of the RSFSR on 2-18 January 1990, the Sverdlovskiy Rayon People's Court of Moscow consisting of: Presiding People's Judge I.A. Troitskaya, People's Assessors Ye.I. Paltsev and V.G. Marchenko, in the presence of secretary V.V. Biteleva, having considered in full session the civil suit of A.Yu. Yakovlev against the editorial board of the journal OGONEK and A.V. Ryskin for the defense of honor and dignity,

RULED:

To oblige the editorial board of the journal OGONEK within a month from the date the ruling takes legal force to publish the refutation that in the article of A.V. Ryskin "Blue Blood"—A Public 'Finale' the information that Investigator Andrey Yuryevich Yakovlev "distorts the facts," "was successful in this 'ungentlemanly' pursuit," and under no circumstances will repudiate the version of the charge when considering the criminal case, does not conform to reality.

One of our oldest geneticists, Vladimir Pavlovich Efroimson, having heard for the first time about the tragic story of "blue blood," said to me:

"This is the rare case, when it is not necessary to prove the truth in any court. 'Blue blood' will exist in the USSR, in spite of anyone's vanities."

"Why?" I asked, not sharing such optimism.

"Because AIDS is approaching," my companion said curtly.

The conversation took place in early 1987. And now the terrible epidemic has approached us in earnest. More and more often the question, to which our alarm gave rise, no longer sounds like idle rhetoric: Can the leaders of Soviet medicine say with a clear conscience to their fellow citizens: "Comrades, today we are doing everything to prevent an epidemic!"? They can say it, of course. But are they doing everything? It is doubtful. For the prevention of AIDS does not reduce to participation in charitable actions. And even if owing to the activity of the AntiSPID Fund and owing to the donations of thousands of people we finally build plants for the production of disposable medical equipment, all the same we will not have a guarantee that the tragedy of Elista and Volgograd will not be repeated. Why? Because in the USSR, as, incidentally, throughout the world, for the present there are no 100-percent reliable tests for the detection of the AIDS virus in the blood of donors.

And hence, taking into account the number of transfusions of donor blood, which are made daily at clinics of

the country, it is possible to say with great probability that sooner or later this will lead to new outbreaks of the epidemic....

It is sad to write about this. It is sad because we are again lagging. But it is a matter this time not of finery. It is a matter of your and my life. In recent years reports on splendid results of the use of fluorocarbon blood substitutes at clinics of the West and the civilized East have begun to turn up more and more often in western scientific journals and the press. The switch of western medicine to synthetic blood substitutes in the quite near future will make it possible to save a large number of lives if only due to the one fact that the danger of infection with AIDS in resuscitations will be completely eliminated.

Today China has already successfully used fluorocarbon blood substitutes under the conditions of a military hospital. In Japan a preparation based on perfluorocarbons, Fluosol DA, which in recent years has been used extensively at clinics, was developed long ago. In the West two very large firms—Kobi-vitrum (Sweden) and du Pont (the United States)—set up a joint enterprise for the production of another fluorocarbon blood substitute, Oxyferol. In the publications of the 3rd International Symposium on Blood Substitutes, which contains 94 reports that were submitted by the United States, Great Britain, Italy, the FRG, France, and China, the report of Doctor R. Moore on the development of a new commercial preparation—Adamontan—was reproduced. This is a second-generation fluorocarbon blood substitute, which surpasses all those previously developed both abroad and in the USSR.

The absurdity of the incident consists in the fact that this time the West is repeating Soviet results five years later. We were five years ago the first country that had a unique blood substitute with the function of the transport of oxygen, which had been successfully tested in clinics. The resuscitation preparation perfluoran, which was developed in the early 1980's at the Pushchino Institute of Biophysics by the laboratory of Feliks Fedorovich Beloyartsev, had a number of advantages with respect to donor blood, without having its many drawbacks. Following the example of Professor Beloyartsev its received the name "blue blood." The incident, which happened with this preparation, and the fate, which befell the physicians and scientists who were involved in its development, have already been repeatedly described in the press and covered in the broadcasts of "The Searchlight of Perestroyka," last year the movie "The Other Blood," which recently appeared on the screens, was made at the Central Studio of Popular Scientific and Educational Films.

I have written twice in OGONEK about "blue blood" (No 36, 1988; No 12, 1989) and, honestly speaking, did not intend to write a third article, presuming that everything had already been stated quite clearly.... But a number of events of recent months force me to return to the problem. The nearly detective story intricacy of the

plot, the abundance of people, who have been drawn into this story, and the complexity of the theme itself force me to remind the reader about several basic factors.

In 1985 the preparation perfluoran was recommended by the Pharmaceutical Committee of the USSR Ministry of Health for clinical testing in resuscitations. They had scarcely begun to use "blue blood" in clinics, when surgeons came across many of its truly marvelous properties. Patients, who had been unconscious for days, came to a hour after a perfluoran infusion. The most serious, incurable injuries of arms, legs, and digits, which threaten the amputation of extremities, often disappeared completely in patients after the use of "blue blood"; the treatment of ischemia of the heart and kidneys, the elimination of cerebral edemas after cranial traumas, the clearing of a fat embolus with the complete restoration of circulation in vessels, which have been clotted by bits of bone marrow, the nearly 100-percent take of kidneys in case of transplanting—physicians of resuscitations know WHAT this list is. But there was and is another, tragic list, which we do not have the right to forget.

In the same 1985 a consistent persecution campaign, which was aimed against Corresponding Member of the USSR Academy of Sciences G.R. Ivanitskiy, director of the Pushchino Center, who together with Professor F.F. Beloyartsev was in charge of the biophysical section of the work, was begun. Vice President of the USSR Academy of Sciences Yu.A. Ovchinnikov played a substantial role in the tragic chain of events. The role of the hostage fell to Beloyartsev, the main developer of the preparation.

Very quickly the incident acquired a criminal tinge. Staff members of the Serpukhov KGB, and then the Serpukhov Interrayon Procuracy, who accused Beloyartsev of a shortage of alcohol, were drawn into the case. They conducted five searches, which were made within a 24-hour period. Not having withstood the persecution, Beloyartsev hung himself on the night after the departure of the investigators of the interrasyon procuracy, who had made another futile search. Professor Beloyartsev died, not being capable of defending by another means his honor and good name. His shaken colleagues appealed to the USSR Procuracy and to the KGB, demanding an inquiry into the circumstances which led Beloyartsev to commit suicide. The USSR Procuracy, which investigated the case, did not find evidence which gave grounds for bringing charges against the staff members of the organs supervised by it. The "case" was turned over to the archive.

Then a new criminal "case" began and quickly expanded. "The case of physicians and scientists," who were involved in the devising and development of the new preparation. The case "on the fact of the violation" of instructions of the Ministry of Health during the clinical tests of perfluoran. While there soon appeared in the newspaper SOVETSKAYA ROSSIYA the devastating articles of correspondent V. Dolmatov, which

suggest sad parallels with well-known periods of our history and in which the human and scientific unscrupulousness of the medical personnel, who had used perfluorane in the clinic, was spoken about with a reference to the materials of the investigation. Absurd and frightening things were said. What the passage on "the conducting of experiments on people" is worth!

As a result G.R. Ivanitskiy was defamed publicly, was removed from the position of director of the Pushchino Center and director of the Institute of Biological Physics, as well as was expelled from the party in the bureau of the Serpukhov City Committee of the CPSU. He was expelled, in spite of the fact that at the general party meeting of the institute more than 100 people came out against his expulsion and only five came out in favor of it. Many well-known physicians and scientists were smeared through the newspaper. The clinical tests of the preparation were halted, the laboratory collective, which had been created by Beloyartsev, was ruined, the Institute of Biophysics, one of the best institutes of the USSR Academy of Sciences, was demoralized. An entire group of investigators for especially important cases, not having found—this is in our days!—any other especially important case, dealt with "the case of the physicians." With what have our specialists in crime detection been dealing for so many years?

On my desk there are two texts—two quotations from official documents. The first is an excerpt from a letter, which was addressed in the fall of 1988 by the investigating group of the USSR Procuracy to Comrade V.M. Chebrikov, today already a former member of the Politburo. In their letter the investigators for especially important cases bring to the notice of high instances the results of many years of work of the group, which for three years gathered material on the abuses of the physicians and scientists, who were involved in the development of "blue blood." In particular, it is reported that the preparation, which was packaged in plastic packets when sent to Afghanistan, was toxic.

It turns out that "dioctyl phthalate—an organic substance that is assigned to the group of toxic substances—enters the composition of the preparation from the plastic in large quantities." And further according to the text of the letter of the investigators: "It should be clear that such effects directly threaten the life and health of people." So assert the investigators, inviting the member of the Politburo to form himself an opinion about the personality of the physicians who allowed such effects. But if it is a question of a "threat to life," there should be the data of toxicologists, which confirm this. Does the investigation have them?

Let us turn to the second document, which is well known to the investigators, since this document was appended to the materials of the case. On 30 April 1988 the department of toxicological research of the All-Union Scientific Research and Testing Institute of Medical Technology issued a conclusion, in conformity with which dioctyl phthalate, which enters the perfluorane

from the plastic of the container, does not affect the biological properties of the preparation and does not cause the death of animals. That is, toxicologists assert the opposite of what the investigators say. Whom is one to believe?

It is well known the toxicology experts are authorized to settle the question of harmfulness, and especially "the real threat to the life and health of people." In the USSR only one laboratory—the laboratory of Professor V.G. Lappo—has the right to issue such conclusions. The Pharmaceutical Committee of the USSR Ministry of Health trusts precisely it when issuing a certificate for every new medical preparation. The conclusion of precisely this laboratory was in the hands of the investigators who were the authors of the letter to Chebrikov. Hence the deliberate misinformation of the member of the Politburo, as well as several million readers of SOVETSKAYA ROSSIYA is obvious, for the same frightening words about a "threat to the life and health of people" are cited in the newspaper with a reference to the materials of the investigation. The letter of Chebrikov and the article in SOVETSKAYA ROSSIYA came to light on nearly the same day. Was I right, having written in the article "Blue Blood"—A Public 'Finale'" (No 12, 1989), that it is impossible to call such behavior gentlemanly, that the concealment of an important document is occurring, and, hence, the distortion of the facts is present?

As a result I found myself on trial, and at the same time so did the editorial board of OGONEK, which was accused of publishing material "which blackens the honor and dignity" of the investigators of the USSR Procuracy.

The point is that in the article I committed a formal error. I called the conclusion, which is already well known the reader and was turned over by toxicologists to the USSR Procuracy, "the investigation's own expert opinion." Indeed, a legal subtlety, which pertains to the drawing up of a document, exists. A scientific conclusion turns into an expert opinion only with the taking from scientists—its authors—of a written statement on criminal liability for the issuing of false information, as well as for the divulgence of information that has been submitted to the investigation.

Fortunately, such a written statement was not taken from the toxicologists of the All-Union Scientific Research and Testing Institute of Medical Technology, and they did not institute legal proceedings against these scientists for the divulgence in the newspaper of "secret" information.

Legal proceedings were instituted against me as the author of the article. Actually, it was for the imprecise use of the term "expert opinion." The document was called otherwise, hence, the authors of the letter to Chebrikov, according to their logic, had not concealed a document with such a name, and, consequently, there was no distortion of the facts. So, quite right, there is no

"expert opinion of the All-Union Scientific Research and Testing Institute of Medical Technology," but there is "the conclusion of the All-Union Scientific Research and Testing Institute of Medical Technology."

But what is the court to do? On the one hand, the court knows that the preparation is not toxic, for specialists were questioned by the court, all the materials on this question, which are available in the criminal case, were obtained on demand. Incidentally, another, already official investigatory toxicological expert opinion, which was made according to all the rules, was found there. Its result is the same. The preparation is not toxic, I say this today, having the confirmation of the actual investigatory expert opinion. But the court is obliged to deal only with the narrow subject of the suit. But in the suit toxicity is not spoken about—only the fact that OGONEK, which wrote about "the investigation's own expert opinion," was not correct, since the document is called otherwise and the investigation could not have referred to a document with such a name. And here is the result: I continue to believe that the investigation distorted the real state of affairs, having actually slandered the people who worked with "blue blood"; but the court, based on the narrow demands of the suit, has to satisfy the claims of the plaintiff.

I inform the readers of OGONEK that in my article "Blue Blood"—A Public 'Finale'" a number of ill-considered statements were made through the oversight of the author.

It is sad to think that if at that time I had written one phrase differently, there would not have been the many months of judicial strain on the nerves, which does not change anything in the painful story of "blue blood," but only leads away from the essence. Another year, the fifth year since the death of Beloyartsev, the fifth year of judicial and investigatory hardships, has been lost, and an end to this is not visible.

Instead of a new preparation, instead of a large number of saved lives the court proceedings against the editorial board of OGONEK are the only result....

And as a posthumous monument to Professor Beloyartsev there are hundreds and thousands of pages of different kinds of expert opinions, conclusions, and records of examinations. Beloyartsev died, but his "cause" lives.

What do we have? In essence, the ruined, defamed collective of the laboratory. And also thousands of letters of readers of OGONEK, who ask what is happening and who are outraged by this incident. But here is what is happening. Perhaps, the investigators themselves are no longer glad that they got involved with "blue blood," but how is one to admit that so many years were spent in vain, and who in such a case will answer for the harm that has been done to the country? The investigators might respond: We did not bring charges against anyone, all the developers and scientists are going through the case as witnesses. Yes, this is so. But, judge for yourself

what the fact that in four years of investigation no charges have been brought against anyone means. It signifies either the lack of the very event of a crime or the lack of conclusive charges. Guided by common sense, it is possible to say: In four years there have been no visible results of the work of the investigating group. But this would be a gross mistake. "Results" exist. In SOVETSKAYA ROSSIYA during these years a compromise of respected people—physicians and scientists—was published on three occasions. The physicians and scientists were called in the newspaper unscrupulous people who lack honor, accusations of conducting "experiments on people," which are dreadful for any physician, were advanced by it....

It is very easy—to crush morally one person, then another, to ruin the career of a third person, to defame them in millions of copies of the newspaper. And then to call the shaken, bewildered people one after another for questioning, to enter in the record their incoherent explanations, and to play patience made up of "experiments on people," drawing up a version of the new "case of the physicians."

But, dear gentlemen, it is not for me to remind you that it is necessary to prove such statement-accusations. And not on the pages of an organ of the press, but in the court. Explain, how do the fact of the divulgence through an associate of the press of the materials of an unfinished investigation and the duplication of a compromise against people, which was begun literally with the first days of the investigation, accord with your professional and gentleman's code?

How does the information, which blackens the honor and dignity of a respected scientist, Corresponding Member of the USSR Academy of Sciences G.R. Ivanitskiy, who was dismissed from all posts and was expelled from the party in accordance with a letter, which was drawn up by you within the walls of the USSR Procuracy, accord with your gentlemanliness? It always seemed to me that such letters and actions blacken the honor and dignity of people, who are dressed in the uniforms of advisers of justice.... Pardon the importunity, but I ask: Did you prove that just one crime of Ivanitskiy, just one crime of anyone whomsoever in this incident actually exists? No? Then who gave you the right to slander innocent people?

In the last article I expressed the apprehension that never, under no circumstances would the investigating group of the USSR Procuracy repudiate the version of the charge. The court ruled that I should apologize. And although a year has passed, while the investigation sticks to its position—I am glad from my heart of the decision of the court, it gives me the hope that sooner or later the investigation will repudiate some criminal versions on the theme of "blue blood." Therefore, I offer my apologies to the investigating group of the USSR Procuracy for this ill-considered phrase and, in apologizing, hope very much that the investigators will henceforth refrain from the publication of the versions of their investigation in

order not to give trustful readers grounds to form inferences about its accusatory tendency....

Let us return to the essence of the case. Will we ever have "blue blood"? I will say honestly: I do not know.... I am sorry, in reviving the conversation over and over again, to return to the self-evident idea that it is intolerable in basic science to live according to the principle "we will catch up," having first done everything in order to fall behind. We are losing on this not simply years, we are depriving the people of the necessary consequences of scientific progress. Everything is so clear that there is no one to try to convince. It is shameful with a planned lag to try to catch up with western firms, while buying from them everything that we ourselves could have had, earlier and much more cheaply. But the tragic "algorithm of success," when a barrage of ill-will overtakes the next outstanding work together with the first success, continues to operate in Soviet science with relentless regularity. Then—according to the script—"the search for the culprits" follows. Then there is the punishment of innocent people. And then, if at this point of the script the innovator displays "prudence" and in time gives up his soul to God, a happy moment of "catharsis" sets in:

The rewarding of all kinds of authorities, who to fanfares openly reveal their real interest, which has little in common with the interest in the truth.

And I believe that in the incident with "blue blood" it is a matter of the tragic fate not of individuals, but of our country. A country, in which people like Beloyartsev are perishing in the struggle against tough mafia forces, while we are losing over and over again together with outstanding people also our moral genetic stock, gradually losing the ability to defend good and to oppose evil... This incident again shows us that as before many of us are tacitly willing to regard as the norm the customary repressions and persecutions, the "assistance" to various "organs." This willingness to "assist" them, the willingness to remain silent, when they are tormenting one's neighbor and one who is distant, and the willingness to lose face have become nearly a genetic willingness, which creates the pressure of **AN INERT ATMOSPHERE**, which is destructive for everything **LIVING**. And I have nothing to say here in lieu of the expected epilog.

There is just one thing, perhaps: "I feel sorry for the state"....

Academician Bayev Interview on Career in Genetic Research

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[Interview with Academician Aleksandr Aleksandrovich Bayev, by APN commentator Svetlana Vinokurova: "Biology Without Illusions. Portraits of Scientists"; date and place not given; first paragraph is PRAVDA introduction]

[Text] The rare charm of this man, the subtle wit and generosity of the soul, the inability to give up a grain of truth brought him the deep respect of colleagues, irreproachable authority among students, the sincerity of friends, and the deference of opponents. Relying on knowledge and experience, Academician Aleksandr Aleksandrovich Bayev repeatedly displayed amazing analytical insight and accuracy in the evaluation of the prospects and "hot spots" in science, with which, as a rule, a chain reaction of discoveries begins.

We are sitting in the chemical, technological, and biological sciences department, of which Academician Bayev until recently was academician secretary. Now he is an adviser of the presidium of the USSR Academy of Sciences and a member of the presidium and an adviser of the Institute of Molecular Biology. The day is waning, and the telephone rings are abating. It is Friday, the end of the week. I ask:

PRAVDA: "Aleksandr Aleksandrovich, how do you spend Saturdays and Sundays?"

A. A. Bayev: "I work. I write."

PRAVDA: "And when work comes to a standstill, does not progress?"

A. A. Bayev: "I read. There are books, to which I often turn.... 'Khozhdeniye po mukam' [The Road to Calvary] of Aleksey Tolstoy, 'Voyna i mir' [War and Peace] of Lev Tolstoy, 'Tikhiy Don' [The Quiet Don] of Mikhail Sholokhov, 'Master i Margarita' [The Master and Margarita] of Mikhail Bulgakov, there is Pushkin, Tyutchev. Books of a general nature on problems of philosophy, sociology, of memoirs."

PRAVDA: "And to which of the philosophers do you turn?"

A. A. Bayev: "During the last year of school (I enrolled before the revolution in a gymnasium, but graduated from a Soviet school) we had the following subject—philosophical propaedeutics. A woman, who was disposed in the spirit of idealistic philosophy, taught it. She was enthusiastic about yoga and willingly distributed the corresponding literature: Russian society had experienced more than once enthusiasm for their philosophy. And I managed to read quite a large number of books on this theme. However strange, this made the opposite impression on me. Since then I have had a sharply

negative attitude toward the teachings of yogas, whether it is a question of ideological principles or the treatment of diseases.

"And, on the contrary, I read with enormous enthusiasm 'World Mysteries' of Ernst Gechel. While later I began to read Engels. And I believe that the very logic of intellectual development led me to Marxist philosophy, to dialectical materialism, on the positions of which I have remained to this day. Therefore, I turn to philosophy and books on philosophy not in order to support somehow the ideological foundations of my world outlook, but in search of a quotation, an interesting thought."

Aleksandr Aleksandrovich was born on 10 January 1904 in the city of Chita. After graduating following the revolution from secondary school, he enrolled in 1921 in the natural science department of the physics and mathematics faculty, then transferred to the medical faculty, graduating from it in 1927. He worked at the hospital clinic of Professor N.K. Goryayev. His first works concerned medical questions.

In 1930 Bayev became a graduate student at the biochemistry chair of Professor V.A. Engelgardt. In 1935 he moved to Moscow and became a scientific associate, then scientific secretary of the Institute of Biochemistry of the USSR Academy of Sciences. Under the supervision of V.A. Engelgardt he began research, which was the basis for his candidate dissertation which, true, was defended...10 years later.

In 1937 trouble broke out: He was arrested and accused of affiliation with the Kazan organization of young Bukharinites, which had supposedly set as a goal the overthrow of Soviet power, the restoration of the capitalism system, the murder of Stalin, acts of sabotage, and so on. Graduate students in biology of Kazan higher educational institutions, who in the early 1930's had participated in the methods seminars of V.N. Slepkov, a professor of Kazan University, were "attached" to this imaginary organization. His brother, A. Slepkov, was an associate of Bukharin and a member of the Ryutin-Slepkov group.

The sentence was severe: for connection with the Bukharin group—the Solovetskiy Special Prison, the Norilsk Camp, exile....

"It is my duty to say," Aleksandr Aleksandrovich noted, "that I returned to life and science to a significant extent, even exclusively owing to the intervention of Vladimir Aleksandrovich Engelgardt. This cost him great trouble for 10 years—from 1944 to 1954...."

"While confined in the Solovetskiy Prison I was permitted to correspond with my mother, who remained in Moscow. But she died soon, and the only thread, which linked me with the world, was broken for a long time. Later, when the possibility of correspondence arose, I avoided it myself, being afraid to bring persecutions upon my possible addressees.... In 1944 for a while I

acquired relative freedom, and the first letter, which I received from 'that world,' was from V.A. Engelgardt.

"Vladimir Aleksandrovich invited me to come to Moscow. I succeeded in obtaining permission for a short-term departure from Norilsk, and I found myself in Moscow semilegally. I was not able to visit libraries, and I worked an entire month in the apartment of Vladimir Aleksandrovich. When leaving for Norilsk, I left in his office an updated and modernized dissertation—'Transformations of 3-Adenylic Acid in the Nuclear Erythrocytes of Birds in Connection With Respiration.' In a few months a telegram arrived: V.A. Engelgardt had approved my work. At his request Academician L.A. Orbeli, then director of the Institute of Physiology of the USSR Academy of Sciences, consented to a defense at his institute. Thus I became a candidate of sciences and even was also awarded the medal 'For Valiant Labor During the Great Patriotic War.' In 1947 the opportunity appeared to leave Norilsk. But.... In 1949 I was again arrested and exiled, now already 'for ever,' as was stated in the sentence of the Special Conference, to the Yenisey River, although I also did not intend to live in the wilds for ever. The third and last stage of my lengthy confinement began there. Not a year had passed since the death of Stalin, when I was rehabilitated and returned with my family to Moscow. Vladimir Aleksandrovich met us at the station. They restored me without red tape at the Institute of Biochemistry of the USSR Academy of Sciences."

At the Norilsk Museum there is an exhibit devoted to A.A. Bayev. He was in charge at the city hospital of the therapeutic department, was a consultant of the children's department, was in charge of the children's milk kitchen, which he himself established, and worked as an X-ray technician, an anesthesiologist, and an anesthetist. On the Yenisey River, in the village of Nizhneye Shadrino, A.A. Bayev developed from an outpatient center a 25-bed hospital, took part himself in the repair of the wards, and was the only physician, who had to do everything, up to the acceptance of pathological labors and the most complicated surgical operations.

In 1954, at the age of 50, when all the people his age already had a name in science, Bayev returned to Moscow as a candidate of sciences. He became a scientific associate of the Institute of Biochemistry of the USSR Academy of Sciences, then of the Institute of Molecular Biology, which was founded by V.A. Engelgardt and now bears his name. After the pogrom, which was conducted by Lysenko, this was a revival, of which V.A. Engelgardt regarded as a typical feature three-dimensionality: chemistry, physics, biology—the three whales, on which the building of the new science was erected. Bayev became an active participant in this process, the development of molecular biology.

PRAVDA: "Are you pleased with your students?"

A. A. Bayev: "Yes. A new generation of scientists has already formed by my side both in Moscow and in other

cities. Of those, who have entered an independent path in science, there are Academician A.D. Mirzabekov, now director of the Institute of Molecular Biology of the USSR Academy of Sciences, and Corresponding Member of the All-Union Academy of Agricultural Sciences imeni V.I. Lenin K.G. Skryabin, in Pushchino there are V.I. Tanyashin, I.I. Fodor, Ya.I. Buryanov, and others. In all 11 doctoral dissertations have been prepared."

PRAVDA: "And with your children?"

A. A. Bayev: "My wife is an geologist by occupation, but her geological knowledge is rarely necessary in family life, while her literary inclinations and taste greatly enrich daily life. And my daughter in this sense followed in the footsteps of my wife. My son works in the field of molecular biology and is a candidate of biological sciences. It is too early to talk about my grandchildren, they simply bring joy by the very factor of their existence."

PRAVDA: "Aleksandr Aleksandrovich, you supervise in the country research in the field of genetic and cell engineering...."

A. A. Bayev: "That is not the point, I bear full responsibility for this," Bayev corrects me.

It is impossible to tell about the scientist, without having spoken about his life in science, for only in it does he live as a researcher and as a creator. Here is a brief chronicle of the discoveries of Bayev in the contexts of the development of molecular biology and genetics.

1967. He succeeded in deciphering five transfer ribonucleic acids (RNA's), which carry the components of protein—amino acids—to the spot of its formation in the cell. A.A. Bayev deciphered one of them—valine.

The 1970's. The practical applications of molecular biology appear more and more distinctly. Genes were distinguished, it is true, in a few cases, and not in man. But in general form the solution of the problem was begun. A new method of synthesizing genes was discovered. It involved both chemistry and an enzyme (reverse transcriptase-revertase) in viruses that cause cancer. At one time it even seemed that the mystery of the origination of cancer would be solved. But this did not happen, although the notions of the nature of cancer were enriched unusually.

A large part of the attention of the laboratory of Bayev was drawn to recombinant (hybrid) molecules. What is the essence? By means of several enzymes it is possible to combine into a whole fragments of different DNA's regardless of their origin. Such molecules consist of two parts: A vector (carrier), which is obtained from a virus or bacterium—this is the active part, on which the reproduction of the molecule depends, and the gene-fragment of DNA of the bacterium.

Having been inserted in a bacterium, for example, *Escherichia coli*, the hybrid molecule is successfully reproduced there and can be obtained in significant

quantities. It is capable of synthesizing protein, the structure of which is predetermined by the gene. Recombinant DNA was obtained for the first time in the USSR at the laboratory of A.A. Bayev. Since then his laboratory has become the base of the training of specialists in genetic engineering.

The most important thing is that recombinant molecules are created by a laboratory method, in a test tube—these are the first synthetic genetic structures. Optimist expectations are connected with the fact that in this way any genetic material can be obtained and reproduced. Incidentally, there are many critics, who say that the development of genetic chimeras is inadequately efficient and can in no way compete with natural processes, and, therefore, the expenditures are unjustified. To which Academician Bayev notes: "Recall how Joule, having once considered that it is cheaper to feed a horse than to change the zinc in an electric battery, came to the conclusion that the horse would never be replaced by an electric motor...."

1980. The development of biotechnological processes for the production of products that are needed by medicine and agriculture was included in the national economic plans of the country. The use for industrial purposes of the world of microorganisms and enzymes revealed the positive aspects of biotechnology: the possibility of the use of renewable raw materials, the mild conditions of the industrial process, the reduction of the number of its stages, and less danger for the environment.

"But when we think about biotechnology," Academician Bayev says, "we also have in mind new directions—genetic and cell engineering. The practical possibilities of genetic engineering have appeared vividly, in addition to basic research, in the production of proteins and peptides and in bacterial cultures. The obtaining of hormones, physiologically active peptides, enzymes, and immune proteins (interferons, alpha-thymosin, antigens) is grouped here. This is already much, but far from everything that genetic engineering can give.

"Even in industrial microbiology its possibilities for the present are being used negligibly. As for higher animal and plant organisms, practical application is being checked first of all by genetics itself. Economically important properties depend on not one, but many genes, and this for the present still presents difficulty for genetic engineering, which has learned to work with a few genes. But the most important thing, which we do not know, is how to find these genes and what their interactions are. Apparently, the further development of the method of recombinant molecules will place in our hands the necessary research tools."

In December 1979 A.A. Bayev became chairman of the Scientific Council for Biotechnology of the USSR Academy of Sciences. In the 1970's and early 1980's not

only genetic engineering, but also protein engineering and bioelectronics emerged. Their prospects are significant.

1983. A report from the laboratory of Academician Bayev: The gene of human growth hormone was obtained. It was inserted into a strain of *Escherichia coli*, which began to produce it in quantities favorable for industrial production. And now it is already a question of releasing it to laboratories and clinics for biological and clinical tests. In two years medical personnel obtain a preparation that is necessary for the treatment of children.

"In all likelihood," the scientist says, "growth hormone will also help in the treatment of burns, fractures, wounds—wherever the regeneration of tissues occurs. Obviously, the growth hormone of animals will prove useful in agriculture."

1987-1990's. The study of the human genome. All previous experience became the basis for the surge. A.A. Bayev spoke about the problem of the genome in February 1988 at the general assembly of the USSR Academy of Sciences. His initiative gave a start to one of the 14 priority state scientific and technical programs in the USSR—"The Human Genome." It is intended for 15 years.

The study of the human genome in both the structural and the functional aspects is envisaged. One of the tasks is the determination of the sequence in the carrier of hereditary information (DNA) of all 3 billion nucleotides.

The program has a direct bearing on the health of man, the treatment of hereditary diseases, cancer....

Can genetic therapy really and actually become a reality, and will people receive effective individual and radical help? Can the middle age of a person really become a period of a beautiful autumn, worldly wisdom, and creative output, and not torment with diseases?

It is possible to hear much from Aleksandr Aleksandrovich about the moral, ethical, social, and scientific aspects of research. Science, he asserts, does not have demonic power over people, and the use of its achievements and the warning of the danger of abuses are the affair of scientists (therefore, glasnost is needed) and governments.

"In my memory—a man who has lived a long life—natural science has been making a larger and larger contribution to the formation of the spiritual world of man and his world outlook," Academician Bayev says. "Now this contribution to the spiritual world of man is the germ of biology of the next century, the foundations of the world outlook and the spiritual world of man of the next century are being laid."

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